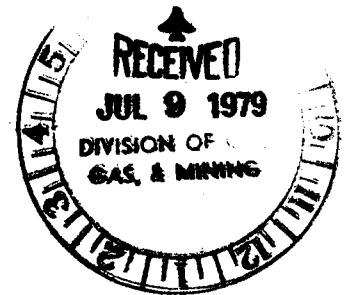


william w. whitley  
1705 colorado state bank building  
1600 broadway  
denver · colorado · 80202  
phone (303) 861-2469

July 4, 1979



State of Utah  
Division of Oil, Gas & Mining  
1588 West, North Temple  
Salt Lake City, UT 84116

RE: #1-24 Federal (U-42474)  
SW $\frac{1}{4}$ SE $\frac{1}{4}$  Sec. 24, T40S-R22E  
San Juan County, Utah

#1-18 Federal  
SW $\frac{1}{4}$ SW $\frac{1}{4}$  Sec. 18, T40S-R23E  
San Juan County, Utah

Gentlemen:

Attached is a copy of my Application for Permit to Drill the two subject wells in San Juan County, Utah, for your files.

If you have any questions or need further information, please advise.

Sincerely,

*WW Whitley / KM*

William W. Whitley

WWW:km

Attachments

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1A. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

B. TYPE OF WELL

OIL  
WELL ☒

GAS  
WELL ☐

OTHER

SINGLE  
ZONE ☐

MULTIPLE  
ZONE ☐

2. NAME OF OPERATOR

WILLIAM W. WHITLEY

3. ADDRESS OF OPERATOR

1600 Broadway, No.1705, Denver, Colorado 80202

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)

At surface

SW $\frac{1}{4}$  SW $\frac{1}{4}$  (513' FWL-743' FSL)

At proposed prod. zone

Same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*

7 Miles East of Bluff, Utah

15. DISTANCE FROM PROPOSED\*  
LOCATION TO NEAREST  
PROPERTY OR LEASE LINE, FT.  
(Also to nearest drg. unit line, if any)

513'

16. NO. OF ACRES IN LEASE

320

17. NO. OF ACRES ASSIGNED  
TO THIS WELL

80

18. DISTANCE FROM PROPOSED LOCATION\*  
TO NEAREST WELL, DRILLING, COMPLETED,  
OR APPLIED FOR, ON THIS LEASE, FT.

None

19. PROPOSED DEPTH

5845'

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

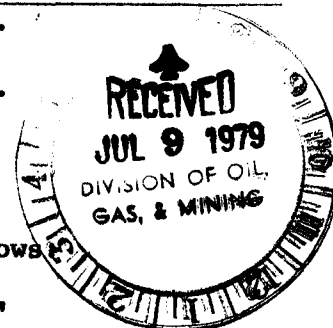
4625' Gr.

22. APPROX. DATE WORK WILL START\*

August 1, 1979

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 $\frac{1}{2}$ "	13-3/8"	32.75 lb.	200'	175 SX.
12-3/4"	8-5/8"	24.00 lb.	950'	525 SX.
7-7/8"	5 $\frac{1}{2}$ "	14 & 15.5 lb.	5845'	150 SX.
-or-				
7-7/8"	4 $\frac{1}{2}$ "	10.5 lb.	5845'	150 SX.



1. The well will be spudded in the Morrison Formation.

2. The estimated tops of important geological formations are as follows:

Entrada	566'	Moen Kopi	2341'	Total Depth	5845'
Carmel	616'	Cutler	2576'		
Navajo	666'	Hermosa	4556'		
Kayenta	1071'	Ismay	5464'		
Wingate	1131'	Lower Ismay	5585'		
Chinle	1524'	"C" Shale	5647'		
Shinarump	2266'	Desert Creek	5687'		

(Continued)

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. ORIGINAL SIGNED BY  
D. P. McCOURT

Petroleum Engineer

June 29, 1979

SIGNED

TITLE

DATE

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

TITLE

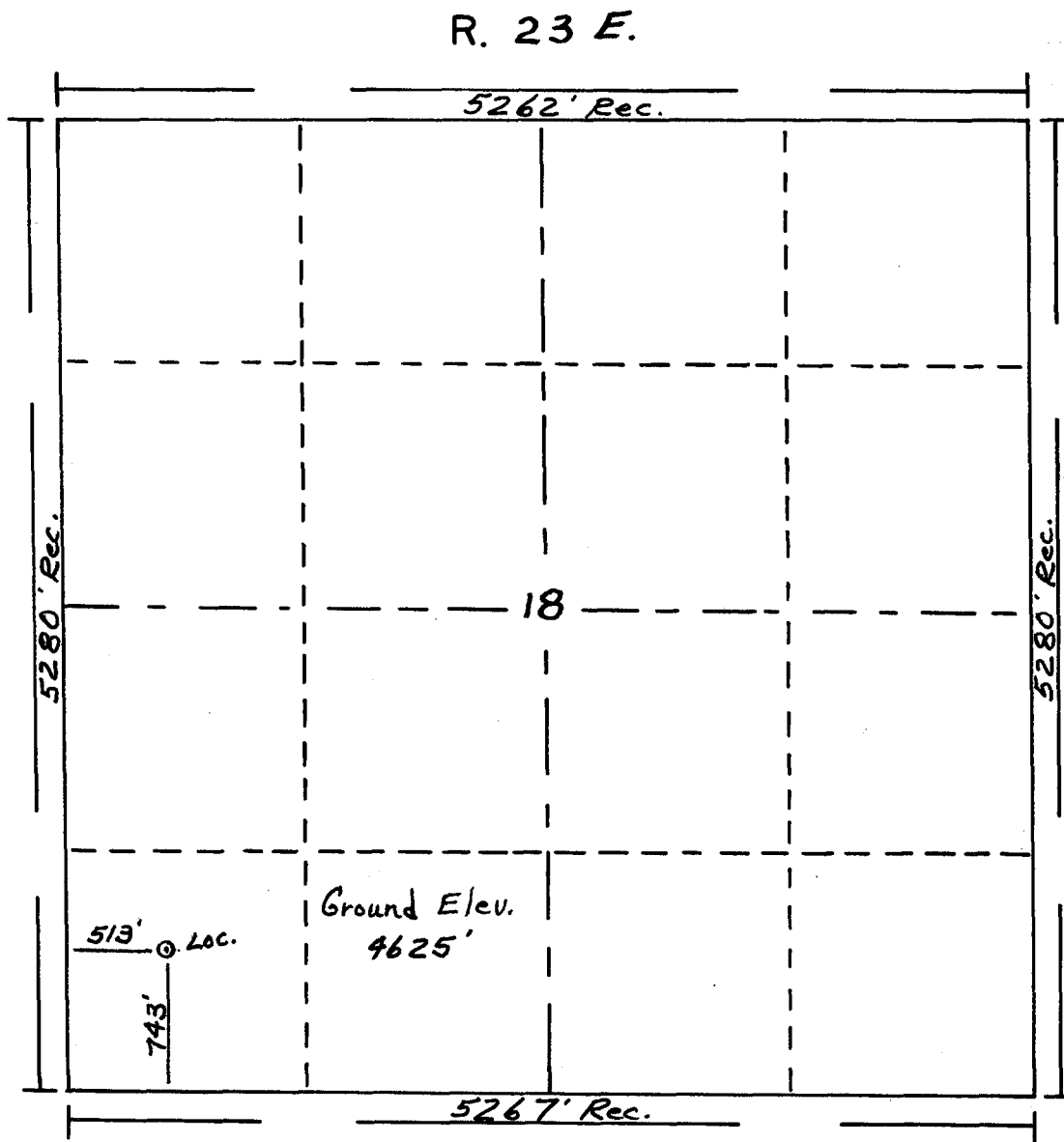
DATE

CONDITIONS OF APPROVAL, IF ANY:

3. Proposed Casing Programs:
  - A. Surface Casing: 200', 13-3/8", 32.75 lb., K-55, 8 rd.th., ST&C New casing.
  - B. Intermediate Casing: If water flow is encountered in Navajo Sand, approximately 1100' of 8-5/8", 24 lb., K-55, ST&C, 8 rd.th., New casing would be run and cemented to surface.
  - C. Production Casing: 5 1/2", 14 lb., and 15.5 lb., K-55, ST&C, 8 rd.th., New casing or 4 1/2", 10.5 lb., K-55, LT&C, 8 rd.th., New casing
4. Estimated depths of anticipated water, oil or gas zones:
  - A. Navajo Sand 666' (Fresh Water)
  - B. Lower Ismay 5585' (Oil)
  - C. Desert Creek 5687' (Oil)
5. The casinghead will be a flanged 13-3/8" x 10", 900 Series, 3000 psi working pressure type. The blowout preventer will be a 10", 900 Series, 3000 psi working pressure with 4 1/2" pipe rams and blind rams with a remote hydraulic closing unit. The blowout preventer arrangement will include a kill line and choke manifold as shown in Exhibit "F" in the schematic diagram. The BOP will be tested to 1000 psi prior to drilling out the cement plug in the surface casing and once each tour.
6. Clear water with drilling detergent will be used for a circulating medium to about 5000' depth. The well will then be mudded up properly before drilling the Ismay formation. The mud will be a fresh water gel chemical type mud. The mud weight will be maintained at about 9.5 lbs./gal., viscosity 35 to 45 sec./qt., and water loss 6 to 8 cc.
7. The following auxiliary drilling equipment will be utilized or available:
  - A. Kelly cock
  - B. Float valve above bit
  - C. A 3,000-psi W.P. full opening valve will be screwed into a 4 1/2" drillpipe sub to be used as a stabbing valve.
  - D. No mud monitoring equipment will be used.
8. No cores are planned on this well. Any Lower Ismay and Desert Creek porosity with oil shows will be drillstem tested. An Induction Electric log will be run from total depth to the base of any casing. A Borehole Compensated Sonic - Gamma Ray Caliper log will be run over any indicated porosity zones with oil shows.
9. No abnormal pressures or temperatures are encountered in the immediate area. The pressure gradient in the Lower Ismay and Desert Creek porosity zones are about 0.388 psi/ft. depth. No hydrogen sulfide has been encountered in the Ismay, Desert Creek or shallower zones in this area.
10. The perforations in either the Ismay or Desert Creek formations will be acidized unless an adequate flow of hydrocarbons into the wellbore is obtained by perforating only. The acid treatments should not be over 500 gallons of acid per foot of perforations. Normal treating pressures are anticipated. If flammable liquids are

used to treat the well, the pumping equipment will be at least 120 feet from the wellhead and the pumping equipment at least 120 feet from the storage tanks.

11. It is planned to spud this well in the last half of July or August.



T. 40 S.

Scale... 1" = 1000'

Powers Elevation Company, Inc. of Denver, Colorado  
has in accordance with a request from *Don McCourt*  
for *William W. Whitley*  
determined the location of  
to be 743' FSL & 513' FWL      Section 18 Township 40 S.  
Range 23 E.      Salt Lake Meridian  
San Juan County, Utah

WILLIAM W. WHITLEY  
#1-18 Federal

I hereby certify that this plat is an  
accurate representation of a correct  
survey showing the location of

Date: 5-31-79

J. Nelson  
Licensed Land Surveyor No. 2711  
State of Utah

R 22E

R 23E

1 AGL 10' 10'

14

\*1-13

15 22 10' 10'

18

\*1-18

T  
40  
S

16 10' 10'

23

24

19

1 AGL 10' 10'

1 AGL 10' 10'

1 AGL 10' 10'

STONCE 10' 10'

STONCE 10' 10'

\*1-24

N RIVER

26

25

30

**LEGEND**

- Well Location
- Producing Oil Well
- ✱ Abandoned Oil Well
- ✧ Dry Hole

SCALE: 1" = 2000'

EXHIBIT C

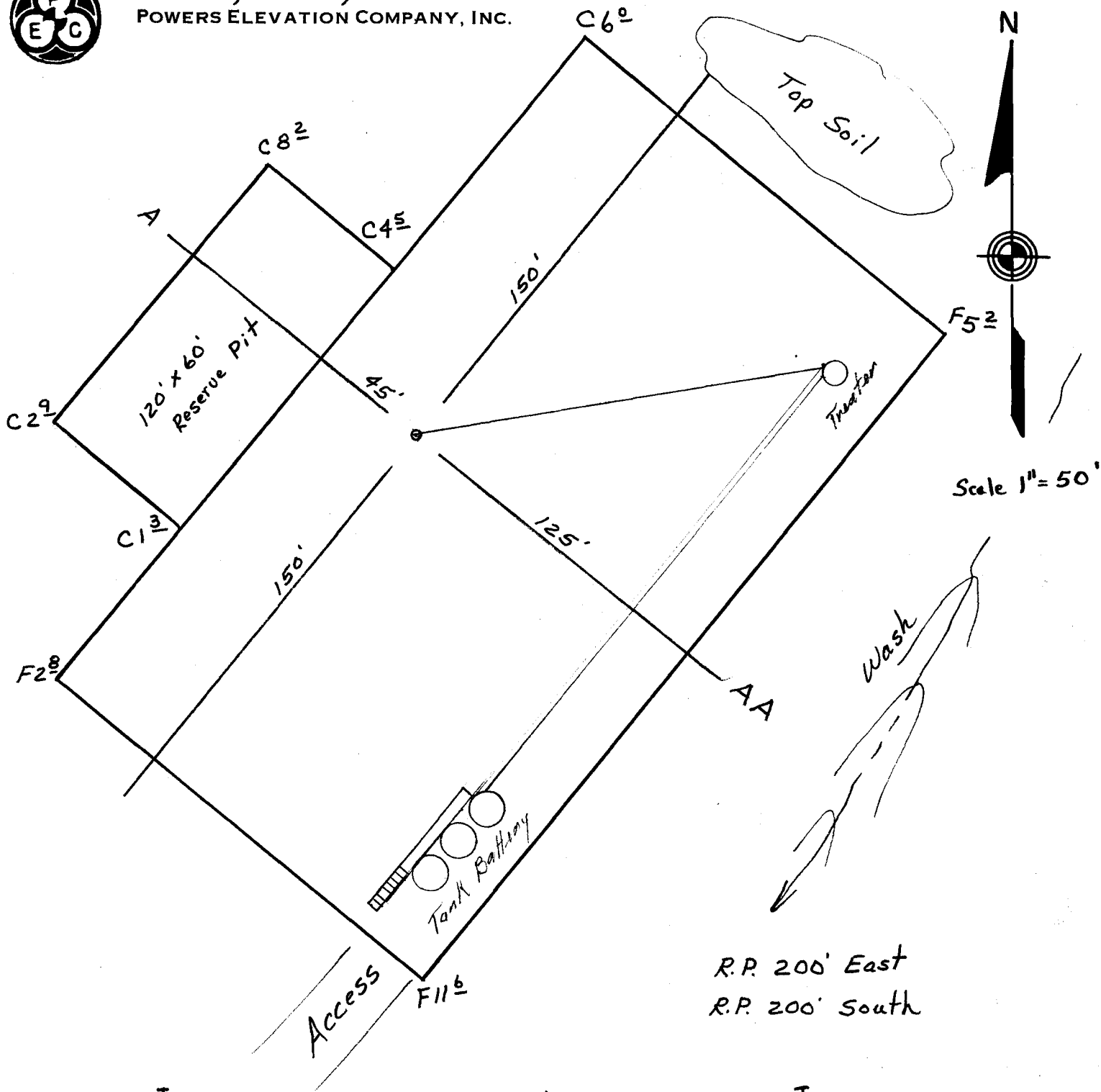
William W. Whitley

EXHIBIT D

743 FSL + 513 FWL

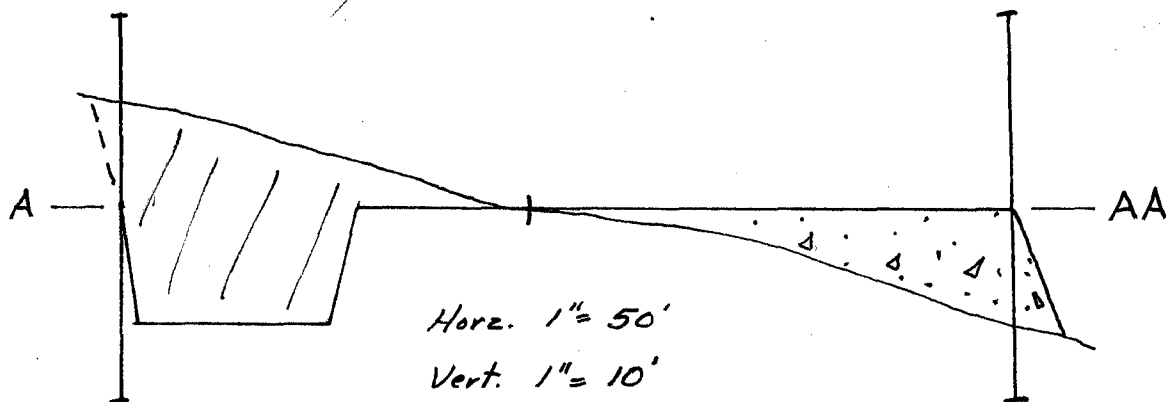
Sec. 18, T-40-S, R-23-E

POWERS ELEVATION COMPANY, INC.



Scale 1" = 50'

R.P. 200' East  
R.P. 200' South



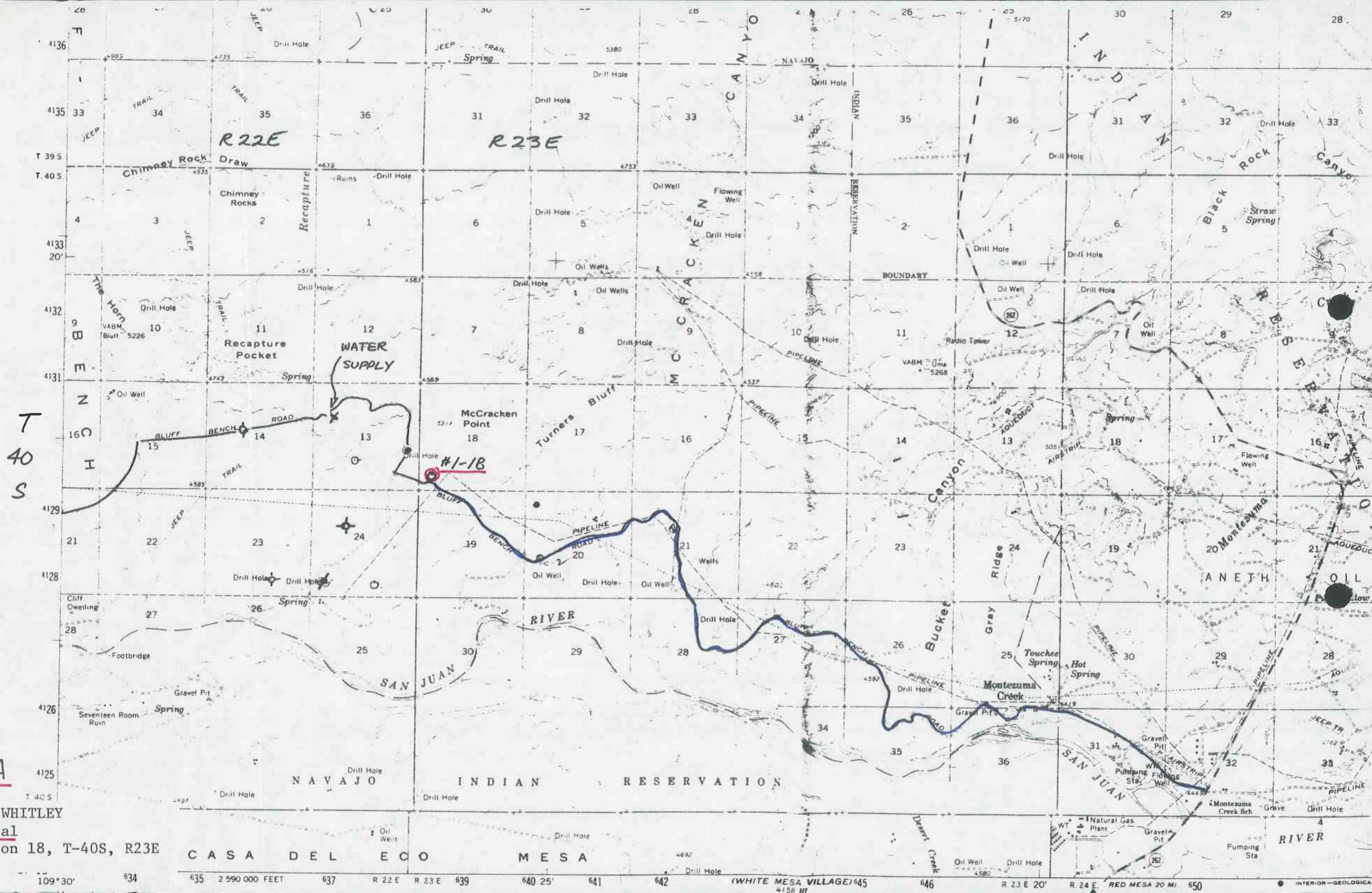


EXHIBIT A

WILLIAM W. WHITLEY  
#1-18 Federal  
SW SW Section 18, T-40S, R23E

CASA DEL ECO MESA  
2 590 000 FEET  
109°30' 634 635 637 639 640 25' 641 642 646  
R 22 E R 23 E  
R 23 E 20' R 24 E RED MESA 20 MI. 650

INTERIOR—GEOLOGICAL

WILLIAM W. WHITLEY

#1-18 FEDERAL  
SW $\frac{1}{4}$ SW $\frac{1}{4}$  (513' FWL & 743' FSL) Sec. 18, T40S-R23E  
San Juan County, Utah

NTL-6 MULTIPOINT REQUIREMENTS

SURFACE USE PLAN

1. Existing Roads

A portion of a U.S. Geological Survey map is attached as Exhibit "A" showing existing roads.

- A. The location plat is attached as Exhibit "B" which shows the location as staked. The well will be drilled in the SW $\frac{1}{4}$ SW $\frac{1}{4}$  (513' FWL and 743' FSL) of Section 18, Township 40 South, Range 23 East, San Juan County, Utah.
- B. The location is 10.2 miles from Utah State Highway 262 which is paved. The 10.2 miles is on an existing oil field road (Bluff Bench Road) which is used for access to Recapture Creek oil field. The road is shown on the map (Exhibit "A") in blue. The road starts at Montezuma Creek and continues west and connects again with Utah Highway 163 about one mile southeast of Bluff, Utah.
- C. The access road from the existing oil field road is shown in red on Exhibit "A". This access road is only 0.1 mile long.
- D. All existing roads within a one-mile radius are shown on the attached Exhibit "A".
- E. No improvements are planned for the existing oil field road. As the surface is very sandy, the road should not need any maintenance.

2. Planned Access Road

- A. The planned access road will be 0.1 mile long. For drilling the well the surface will need to be bladed. If the well is successful, a road will be bladed 20 feet wide and approximately one foot above the present level.

- B. The maximum grade will be approximately three percent.
- C. No turnouts will be necessary.
- D. No drainage will be necessary other than the barrow pits created by blading the road if the well is successful.
- E. No culverts or major cuts or fills will be necessary.
- F. No road surfacing materials will be required.
- G. No gates, cattleguards, or fence cuts will be required.
- H. The center line of the road has been flagged

3. Location of Existing wells (Exhibit "C")

For all existing wells within a one-mile radius of this well.

- A. There are no water wells within a one-mile radius of this location.
- B. There are no plugged and abandoned well within a one-mile radius of this location.
- C. There are no temporarily abandoned wellswithin a one-mile radius of this well
- D. There are no disposal wells within a one-mile radius of this well.
- E. There are no wells presently being drilled within a one-mile radius of this proposed location.
- F. There is one producing well located within a one-mile radius of this proposed well, located in the NE $\frac{1}{4}$ SE $\frac{1}{4}$  Section 13, T40S-R22E, San Juan County, Utah.
- G. There are no shut-in wells located within a one-mile radius of this proposed location.
- H. There are no injection wells located within a one-mile radius of this proposed location.
- I. There are no monitoring or observation wells for other uses located within a one-mile radius of this proposed location.

#### 4. Location of Existing and/or Proposed Facilities

- A. Within a one-mile radius of location the following existing facilities are owned or controlled by lessee/operator:
- 1) Tank Batteries: None
  - 2) Production Facilities: None
  - 3) Oil Gathering Lines: None
  - 4) Gas Gathering Lines: None
  - 5) Injection Lines: None
  - 6) Disposal Lines: None
- B. If production is obtained, new facilities will be as follows:  
A pumping unit, engine, heater treater, separator, flowline and tank battery will be required; the tank battery will be located on the drilling pad.
- 1) The tank battery will consist of two or three 400-barrel welded tanks as shown on Exhibit "D" and a 4' x 20' or 6' x 20' vertical treater. The treater will be located at least 150 feet from the wellhead and the stock tanks will be located at least 150 feet from the wellhead and the treater.
  - 2) Exhibit "D" shows the location and dimensions of the proposed facilities.
  - 3) The oil and gas flow lines will be 3" fiberglass or steel lines wrapped with a plastic protective coating buried 5 feet deep. The circulating line will be 2" diameter steel line also buried. When the pumping unit is installed, it will be installed on a gravel pad with a wide base.
  - 4) The production pit will be fenced. If the well produces over 5 BWPD, the production pit will be lined and flagged unless the water is fresh. The pumping unit will have guard rails installed around the crank weights and belt guards will be installed over the V-belts from the engine to the pumping unit. A siphon pit will be installed ahead of the water disposal pit.
- C. Plan for Rehabilitation of Disturbed Areas no longer needed for Operations:

The reserve pit will be backfilled and recontoured to the original contour as close as practical and the topsoil replaced. If the well is plugged and abandoned, the location will be leveled and the topsoil replaced. All foreign material will be buried in the reserve pit.

The topsoil will be reseeded in a native grass seed mixture recommended by the Bureau of Land Management. The reseeded will be done at the appropriate time of year so that seeds will germinate properly. The same procedure will be followed for the location pad and access road if the well is plugged and abandoned.

#### 5. Location and Type of Water Supply

The drilling water will be hauled by truck Recapture Creek at a road crossing approximately in the center of the NW $\frac{1}{4}$  Section 13, T40S-R22E. (See Exhibit "A").

#### 6. Source of Construction Materials

No construction materials will be needed.

#### 7. Method of Handling Waste Disposal

- A. Cuttings: Drill cuttings will be contained in the reserve pit.
- B. Drilling fluids: Drilling fluids will be contained in steel mud tanks and the reserve pit. The reserve pit will be fenced if it cannot be backfilled immediately after the well is drilled.
- C. Any produced oil will be contained in steel swab or test tanks. Produced water, if any, will be contained in the production pit after the well is completed and in swab tanks or the reserve pit until the well is completed and the battery installed.
- D. Sewage will be disposed in the reserve pit or sanitary holes.
- E. Garbage and waste material will be contained in the trash pit. The trash pit will be fenced with a mesh fence.
- F. The wellsite will be policed of all foreign material after the drilling and completion rigs are moved off. All trash will be burned or buried. The reserve pit will be backfilled and reseeded.

#### 8. Ancillary Facilities

Not Applicable.

#### 9. Wellsite Layout

- A. See attached Exhibit "D" for cuts and fills in the drillsite location.
- B. The layout of the rig is shown on Exhibit "E".
- C. The rig orientation, parking areas and entrance of access road are shown on Exhibit "E".
- D. The reserve pit will not be lined. The water disposal pit will be lined if the well produces over 5 BWPD.

- E. The location of the production facilities is shown on Exhibit "D" attached.

#### 10. Plans for Restoration of Surface

- A. The reserve pit will be backfilled and recontoured to the original contour as closely as practical and the topsoil replaced. The location will be leveled and topsoil replaced. All foreign material will be buried in the reserve pit.
- B. The topsoil will be replaced and reseeded to native grasses according to the BLM's specifications on all the unused portions of the location and all of the reserve pit. In case of a dryhole the road will be reseeded unless the surface owner wishes to use it.
- C. The reserve pit will be fenced as soon as the rig is moved off and until it is backfilled. The reserve pit will be backfilled as soon as it dries up enough.
- D. If any oil is left on the reserve pit, it will be removed or the pit flagged.
- E. The reserve pit will be backfilled just as soon as it dries up enough and the weather permits. The location will be leveled as soon as the rig moves off if the well is plugged and abandoned or after production operations are suspended if the well is a producer. The topsoil will be replaced and the location will be reseeded when the weather is right after the location is restored.
- F. The well is planned to be drilled in the last half of July or early August. The rehabilitation operations should be completed by early fall.

#### 11. Other Information

- A. The topography in the general area is rough although this location and access road is good. The soil is very sandy and should be easy to doze and should not cause any problems even in prolonged wet weather. The surface of this location is about 85 percent bare sandstone, about 7½ percent sagebrush and 7½ percent Mormon Tea. The location will be difficult to build and it will require dozing fill from the southeast side of the location onto the bare sandstone. The well will be spudded in the Bluff Sandstone.
- B. The surface is very arid and the only thing the land could be used for is sheep grazing. The surface is owned by the Federal Government.
- C. No occupied buildings, historical sites, cultural sites or archeological sites are evident from inspecting this location or the access roads.

12. Lessee's or Operator's Representative

The Operator's field representative who will be responsible for compliance with the Surface Use and Operations Plan is A. Vitali, Jr. Mr. Vitali can be reached by telephone, Area Code 303-233-2383.

13. I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by William W. Whitley, and William W. Whitley's contractors and subcontractors in conformity with this plan and terms and conditions under which it is approved.

ORIGINAL SIGNED BY FOR  
R. W. PETERSON

by Donald P. McCourt

Robert W. Peterson, Petroleum Engineer

Dated: June 27, 1979

RWP:km

Attachments

RIG No. 19

CACTUS DRILLING CORP.

APPROX SCALE 1" = 50'

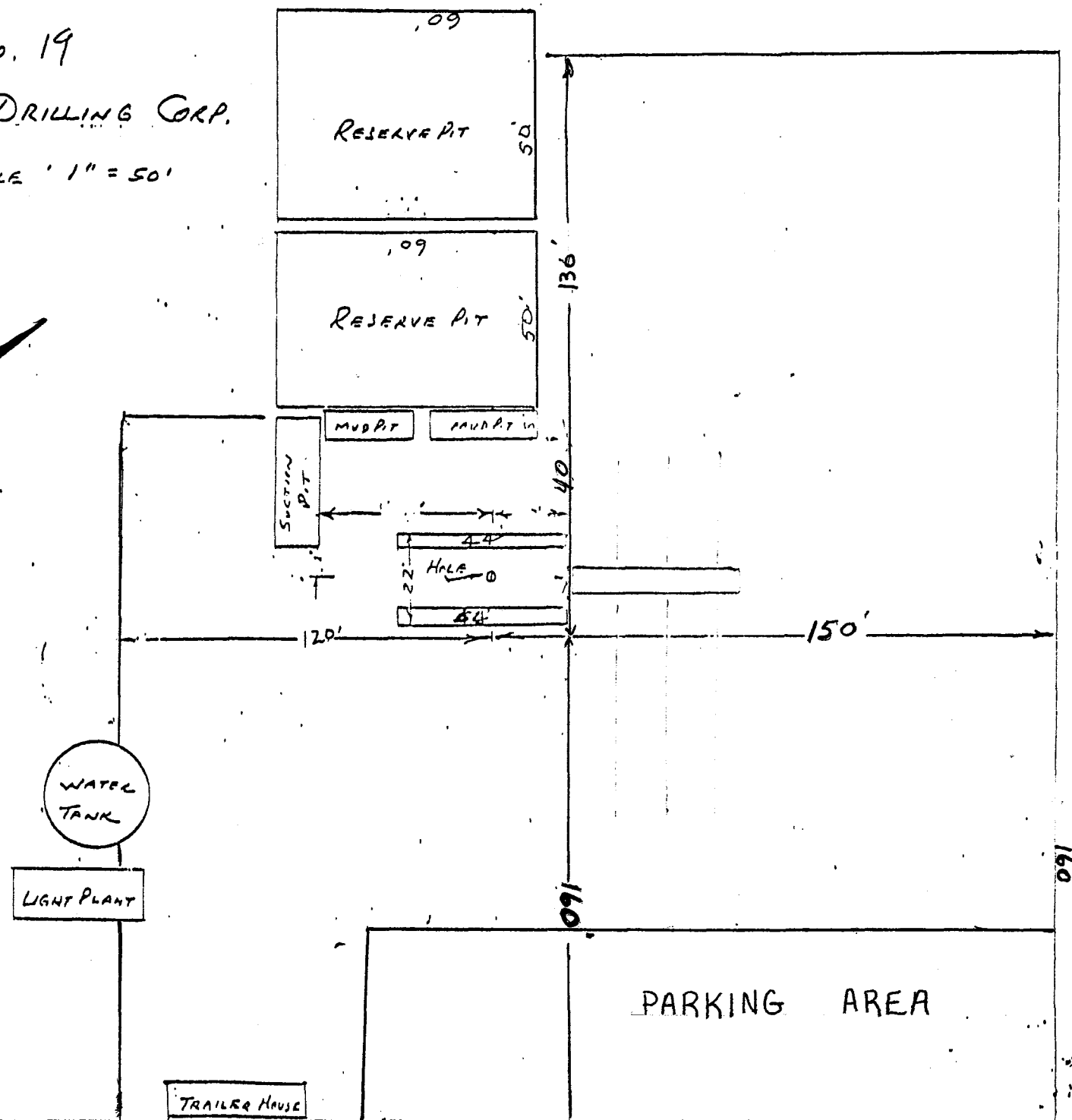
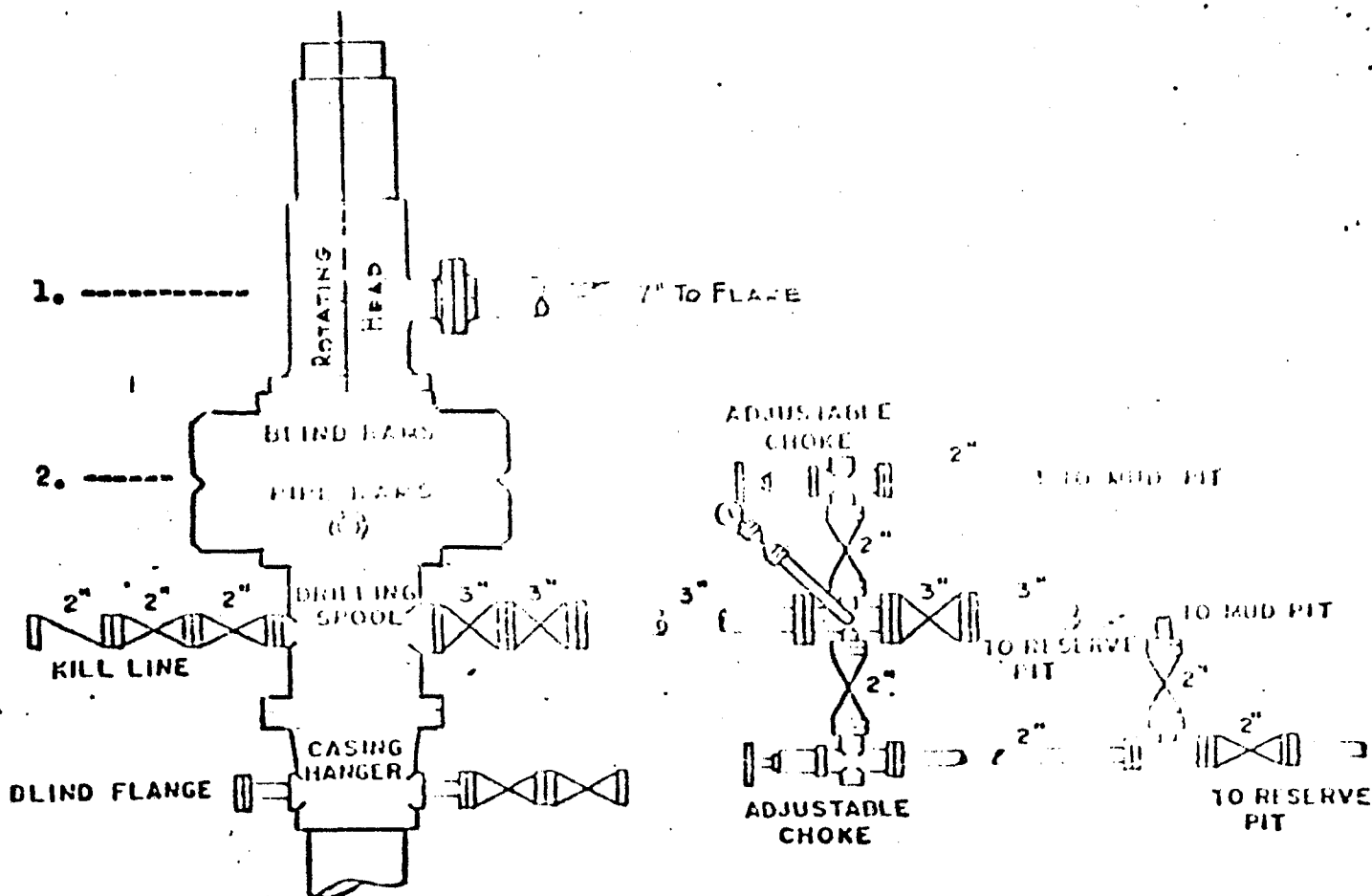


EXHIBIT E



1. Shaffer Type 51 Rotating Head

2. Shaffer 12" 900 Series Type 48 Double Hydraulic

STATE OF UTAH  
DIVISION OF OIL, GAS, AND MINING

\*\* FILE NOTATIONS \*\*

Date: July 9, 1979

Operator: William W. Whitley

Well No: Federal 1-18

Location: Sec. 18 T. 40S R. 23E County: San Juan

File Prepared: ☐

Entered on N.I.D.: ☒

Card Indexed: ☒

Completion Sheet: ☒

API Number: 43-037-30492

CHECKED BY:

Administrative Assistant: \_\_\_\_\_

Remarks:

Petroleum Engineer: M. J. Muir 7-12-79

Remarks:

Director: 2

Remarks:

INCLUDE WITHIN APPROVAL LETTER:

Bond Required: ☐

Survey Plat Required: ☐

Order No. \_\_\_\_\_

Surface Casing Change ☐  
to \_\_\_\_\_

Rule C-3(c), Topographic exception/company owns or controls acreage  
within a 660' radius of proposed site ☐

O.K. Rule C-3 ☐

O.K. In \_\_\_\_\_ Unit

Other:

☒

Letter Written/Approved

Wm

2nd  
USGS

July 13, 1979

William W. Whitley  
1705 Colorado State Bank Building  
1600 Broadway  
Denver, Colorado 80202

Re: William W. Whitley  
Well No. Federal 1-18  
Sec. 18, T. 40S, R. 23E,  
San Juan County, Utah

Dear Sir:

Insofar as this office is concerned, approval to drill the above referred to well is hereby granted in accordance with Rule C-3, General Rules and Regulations and Rules of Practice and Procedure.

Should you determine that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

MICHAEL T. MINDER - Geological Engineer  
Home: 876-3001  
Office: 533-5771

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (aquifers) are encountered during drilling. Your cooperation in completing this form will be appreciated.

Further, it is requested that this Division be notified within 24 hours after drilling operations commence, and that the drilling contractor and rig number be identified.

The API number assigned to this well is 43-037-30492.

Sincerely,

DIVISION OF OIL, GAS AND MINING

Michael T. Minder  
Geological Engineer

/b:tm  
cc

WILLIAM W. WHITLEY  
#1-18 Federal Well  
Turner Bluff Prospect  
SW $\frac{1}{4}$ SW $\frac{1}{4}$  Section 18, T40S-R23E  
San Juan County, Utah

Contractor: Cactus Drilling Company  
Elevation: G.L. 4625'  
Proposed TD: 5845'



Daily Report

- 10-15-79 Depth 214', drilling surface hole. Spudded well at 11:00 A.M. 10/14/79. Fm. Ss., MW 8.8, Vis. 40. Bit #1: 17 $\frac{1}{2}$ " HTC OSC-3, Rerun, 0-214', 214' in 17 hrs. WOB: all; RPM: 58. Time: Drilling 17 hrs., rig up & spud 3 hrs., drill rathole and mouse hole 4 hrs.
- 10-16-79 Depth 324', drilling, Ss. & Sh., drilled 110' in 24 hrs. Bit #2: 8-3/4", HTC OSC-1G, New, 218-324', 106' in 1 $\frac{1}{2}$  hrs. WOB 25,000#, 80 RPM, 900 PP, 57 SPM, Liner 6" x 16". Ran 5 jts., 214' of 13-3/8", 48 lb., K-55, R-3, ST&C, 8 rd.th., new casing. Cem. @ 225' K.B. w/225 sx Type E cement w/2% CaCl<sub>2</sub>. Plug down 11:30 A.M. 10-15-79. Float held and cement circulated. Rig Time: Drilling 3 hrs., repair pump 2 hrs., Survey  $\frac{1}{2}$  hr., RU & Run surface csg. 4 $\frac{1}{2}$  hrs., cem. 1 hr., WOC 11 $\frac{1}{2}$  hrs., NU 1 $\frac{1}{2}$  hrs.
- 10-17-79 Depth 1400', drilling, sd. & sh., MW 8.6, Vis. 34. Bit #2: 8-3/4" HTC OSC-1G, 218-1244', 1026' in 12 hrs. Bit #3: 7-7/8", HTC OSC-1G, 1244-1400', 156' in 2 hrs., incomplete. WOB 38,000#, RPM 65, PP 1100, 57 SPM, Liner 5 $\frac{1}{2}$  x 16". Dev. 1/4<sup>o</sup> @ 1214'. Time: Drilling 18 hrs., tripping 2 $\frac{1}{4}$  hrs., repair mud line 1 hr., repair cathead 2-3/4 hrs.
- 10-18-79 Depth 2045', drilling, ss & sh., drlg. w/water. Bit #3: 7-7/8", HTC OSC-1G, 532' in 13 $\frac{1}{2}$  hrs. Bit #4: 7-7/8" HTC J-22, in @ 1776', 269' in 10 hrs., inc. WOB 38,000#, 50 RPM, 1,000 PP, 56 SPM. Dev. 1/2<sup>o</sup> @ 1618'. Time 21 $\frac{1}{2}$  hrs., tripping 2 hrs., rig service 1/4 hr., TST 1/2 hr.
- 10-19-79 Depth 2190', drilling, sand and shale. MW 8.6 (water). Bit #4: 7-7/8", J-22, 414' in 16 $\frac{1}{2}$  hrs. WOB 38,000, 55 RPM, PP 1200, SPM 56. Time: Drilling 6 $\frac{1}{2}$  hrs., tripping 8 hrs., fishing 9 $\frac{1}{2}$  hrs.
- 10-20-79 Depth 2834', tripping out, shale. MW 8.6, Visc. 32, WL 9, PH 10.5, FC 2/32, Chl. 1200. BIT #4: 7-7/8", Smith J-22, in @ 1776, inc. WOB 38,000#, 55 RPM, PP 1200, 56 SPM. 19 drill collars - 6 $\frac{1}{4}$ ", 545'. Dev. 1/2<sup>o</sup> @ 1618'. Time: Drilling 18 $\frac{1}{4}$  hrs., fishing trip 4 hrs., rig service 1/4 hr., repair head 1 $\frac{1}{2}$  hr.
- 10-21-79 Depth 2834', tripping, sand & shale, MW 9, Vis. 35, WL 8, FC 2/32. Bit #4: 7-7/8" Smith J-22, 1058' in 33 $\frac{1}{4}$  hrs. Bit #5: 7-7/8" Smith J-33, in @ 2834', inc. Rig Time: tripping 8 $\frac{1}{2}$  hrs., circ. & mix mud 7 hrs., (Incomplete). 19 drill collars, 6 $\frac{1}{4}$ ", 545'.
- 10-22-79 Depth 2834', circulating, shale. MW 9.2, Vis. 45, WL 10.2, PH 10.5, FC 2/32, Chl. 1200. Bit #6: 7-7/8", (subject to correction tomorrow). WOB 37,000#, 60 RPM, PP 1100, 58 SPM. 19 drill collars, 6 $\frac{1}{4}$ ", 545'. Time: Tripping for hole in drillpipe 5 $\frac{1}{2}$  hrs., circ. & cond. 3 hrs., WO mud 10 hrs., WOB 2 $\frac{1}{2}$  hrs. WK 320 3 hrs.



## Daily Report - Page Two

- 10-23-79 Depth 2834', washing & reaming 2000-2400'. MW 9.3, Vis. 60, WL 6.6, PH 10, FC 2/32, Chl. 200. Bit #6: 7-7/8" Hughes J22, in @ 2834', no hole, pulled out. Bit #7: 7-7/8", Hughes OSC-1G, in @ 2834'. WOB 35,000, 60 RPM, PP 1100, 58 SPM. After Bit #7, reaming/washing 19 6 1/4" collars 545'. Rig time: Tripping 7 1/2 hrs., repairs 1 hr., Mixing mud 2 1/2 hrs., reaming/washing 12 hrs., Unclogged Flowline, 1 hr.
- 10-24-79 Depth 2840', drilling. MW 9.8, Vis. 51, WL 8.2, PH 11, FC 2/32, Chl 5400. Rig time: Tripping 10 1/2 hrs., repair liner/pump 2 hrs., cond. mud 4 hrs., fishing 2 1/2 hrs., repair rotary sprocket 2 hrs., WOR sprocket 3 hrs.
- 10-25-79 Depth 2840', washing & reaming @ 2775' (59' off bottom). MW 12, WL 6, PH 8, FC 2/32, Chl. 1200. WOB 10-12,000, PP 800, 56 SPM. Rig Time: tripping 4 hrs., circ. & cond. 4 hrs., wash & ream 11 hrs., milling w/mill head 3 hrs., fishing w/basket 2 hrs. 36" pipe wrench in hole. Ran globe mill & basket, trying to fish out.
- 10-26-79 Depth 2970', drilling, sh. MW 10.2, Vis 63, WL 8, PH 11, FC 2/32, Chl. 8200. Bit #8: 7-7/8" Smith HJ, 136' in 10 hrs. WOB 38,000, 60 RPM, PP 1200, 45 SPM. Have not yet felt wrench. Rig time: Drilling 10 hrs., tripping 5 hrs., Circ. 1 hr., washing & reaming 8 hrs (@2180')
- 10-27-79 Depth 3115', drilling, drilled 145' in 24 hrs., Fm. sd., sh. MW 10, Vis. 45, WL 8, PH 11.5, FC 2/32. Bit #9: Hughes J-33, WOB 35,000, 55 RPM, In @ 2970'. Rig time: Drilling 17 hrs., tripping 5 1/4 hrs., TST 1/2 hr., Rig repair 1 1/4 hrs. (compound chain).
- 10-28-79 Depth 3315', drilling, drilled 200' in 24 hrs., Fm. Ss & sh. MW 10.0, Vis. 46, WL 8, PH 11.5, FC 2/32, Chl. 3,000. Bit #9: 7-7/8" HTC J-33, New, 340' in 33-3/4 hrs. WOB 35,000, 55 RPM, 1200 PP 57 SPM. Dev. 3/4 @ 2975'. Rig time: Drilling 23-3/4 hr., rig repairs 1/4 hr.
- 10-29-79 Depth 3500', drilling, drilled 185' in 24 hrs. Fm. Ss & sh. MW 10.0, Vis. 45, WL 8.0, PH 11.0, FC 2/32, Chl. 3,000. Bit No. 9: 7-7/8" HTC J-33, New, 525' in 57 1/4 hrs. WOB 35,000, RPM 55, PP 1200, SPM 57. Rig time: Drilling 23-3/4 hrs., Rig serv. 1/4 hr.
- 10-30-79 Depth 3760', drilling, drilled 260' in 24 hrs. Fm. Ss & Sh. MW 10.0, Vis. 45, WL 9, PH 10.5, FC 2/32, Chl. 2500. Bit #9: 7-7/8" HTC J-33, New, in @ 2975', inc., 785' in 71 hrs. WOB 35,000#, 55 RPM, PP 1200, 57 SPM. Dev. 1 @ 3567'. Rig time: Drilling 23 1/2 hrs., rig serv. 1/4 hr., surveys 1/4 hr.
- 10-31-79 Depth 3985', tripping, 225' drilled in 24 hrs. Fm. Ss & sh. MW 10.0, Vis. 46, WL 8.2, PH 11.0, FC 2/32, Chl. 2100. Bit #9: 7-7/8" J-33, New, New, 1010' in 93-3/4 hrs. WOB 37,000, 55 RPM, 1200 PP, 57 SPM. Dev. 1 @ 3883'. Rig time: Drilling 23-3/4 hrs., rig serv. 1/4 hr.
- 11-1-79 Depth 4152', tripping. 167' drilled in 24 hrs., Ss & Sh. Fm. MW 9.1, Vis 45, WL 8.4, PH 10.5, FC 2/32, Chl. 3200. Bit #9: 7-7/8", HTC J-33, New, 2975-4152', 1177' in 114 1/2 hrs. WOB 38,000, RPM 55, PP 1200, 57 SPM. Rig time: drilling 19-3/4 hrs., tripping 4 hrs., rig service 1/4 hr.

Daily Report - Page Three

- 11-2-79 Depth 4320', drilling. Fm. Sd. & Sh. MW 9.8, Vis. 45, WL 9, PH 9.5, FC 2/32, Chl. 2000. Bit #9: 7-7/8" Smith F-3, 168' on bit in 15½ hrs. WOB 38,000#, 55 RPM, PP 1000, 56 SPM. Washed 100' to bottom. Rig time: Drilling 15½ hrs., tripping 8½ hrs.
- 11-3-79 Depth 4504', drilling, drilled 184' in 24 hrs., Fm. ss & sh. MW 9.8, Vis. 44, WL 9.5, PH 11.0, FC 2/32, Chl. 2200. Bit #10: 7-7/8" Smith F-3, New, 352' in 34¼ hrs. WOB 40,000#, 60 RPM, PP 1000, 57 SPM. Rig time: Drilling 18-3/4 hrs., tripping (hole in drill pipe) 2-3/4 hrs., Rig serv. 1/4 hr., repairs 2-1/4 hrs. (pump repair).
- 11-4-79 Depth 4670', drilling, drilled 166' in 24 hrs., Fm. Ss & sh., MW 9.8, Vis. 45, WL 9.0, PH 10.0, FC 2/32, Chl. 1800. Bit #10: 7-7/8" Smith F-3, New, 518' in 56-3/4 hrs. WOB 40,000, 60 RPM, 1000 PP, 57 SPM. Dev. 1¼° @ 4670'. Rig time: Drilling 22½ hrs., rig serv. ¼ hr., repairs 3/4 hr., survey ½ hr.
- 11-5-79 Depth 4766', WO water, 94' drilled in 24 hrs. Fm. ss & sh. MW 9.6, Vis. 49, WL 9.2, PH 11.0, FC 2/32, Chl. 1600. Bit #11: 7-7/8", Smith F-3, in @ 4766'. WOB 38,000, 58 RPM, PP 1000, 58 SPM. Rig time: Drilling 15½ hrs., tripping 3¼ hrs., rig serv. ¼ hr., WO Water 5 hrs.
- 11-6-79 Depth 4918', drilling, drilled 152' in 24 hrs., Fm. Ss & Sh. MW 9.7, Vis. 46, WL 9.0, PH 11.0, FC 2/32, Chl. 1700. Bit #11: 7-7/8", Smith F-3, New, 4766-4918', 152' in 16½ hrs., WOB 38,000#, 55 RPM, PP 1000, 57 SPM. Dev. ½° @ 4766'. Rig time: drilling 16½ hrs., tripping 2 hrs., WO water 5½ hrs.
- 11-7-79 Depth 5085', drilling, sd., sh. MW 9.8, Vis. 43, WL 9, PH 11, FC 2/32, Chl. 1100. Bit #11: Smith F3, in @ 4766', 319' in 35-3/4 hrs. WOB 40,000#, 50 RPM, PP 1100, 57 SPM. Dev. 1/2° @ 4766'. Rig time: Drilling 19¼ hrs., tripping 4½ hrs. (hole in drill pipe), rig serv. 1/4 hrs.
- 11-8-79 Depth 5300', drilling, 215' drilled in 24 hrs., Fm. Ls. MW 9.8, Vis. 40, WL 9.5, PH 11.5, FC 2/32, Chl. 1100. Bit #11: 7-7/8", Smith F-3, New, 4766'-5300', 534' in 59¼ hrs. WOB 40,000#, RPM 50, PP 1000, 58 SPM. Dev. 1/2° @ 5295'. Rig time: drilling 23½ hrs., rig serv. ¼ hr., Surveys 1/4 hr.
- 11-9-79 Depth 5500', drilling, Fm. lime, MW. 10, Vis. 48, WL 10, PH 9.5, FC 2/32, Chl. 1100. Bit #11: 7-7/8", Smith F-3, 734' in 83 hrs. WOB 40,000#, 50 RPM, PP 1,000, 56 SPM. Rig time: Drilling 23-3/4 hrs., rig ser. 1/4 hr.
- 11-10-79 Depth 5618', drilling, Fm. Sd., MW 10, Vis 40, WL 9.6, PH 11.5, FC 2/32, Chl. 1100. Bit #12: (re-run) J-33 Hughes, 37' in 5 hrs. WOB 40,000#, 50 RPM, PP 1100, 57 SPM. Time: Drilling 13-3/4 hrs., tripping 6 hrs., rig serv. 1/4 hr., cut drilling line 2 hrs., wash & ream to bottom 2 hrs.

Daily Report - Page Four

11-11-79 T.D. 5685', tripping out (Packers would not set). Fm. lime, MW 10, Vis. 44, WL 9, PH 11, FC 2/32, Chl. 700. Bit #12: 7-7/8" J-33, 104' in 11 hrs. WOB 38,000#, RPM 50, PP 1200, 56 SPM. Rig time: Drilling 6 hrs., tripping 10 hrs. (incl. short trip), rig serv. 1/4 hr., Circ. 3-3/4 hrs., pick up test tool 2 1/2 hrs., attempt DST 1 1/2 hrs. Attempted DST #1 to 5685' (packers failed immediately). Well is 24' low to Renwar well. Good oil shows started at 5600', (good fluorescence, some cut, some vugs, & some calcite), poor show started at 5560'.

11-12-79 T.D. 5685', tripping. Fm. Lime. Bit #13: 7-7/8" J-33, no footage, no hours, Bit #13, in @ 2685'. Vis. 45, MW 10, WL 9, VC 2/32, PH 11, Chl. 1100. Rig time: 14-3/4 hrs. tripping, 2 1/4 hrs. changing packer & perf. on DST #1A, 4-3/4 Hrs. testing DST #1A, 2 1/4 hrs. break out test tool.

DST #1A, 5565-5685' (120' Ismay Zone - Halliburton Testers - Bottom Anchor)

Tool opened w/ faint blow, increased to weak, 3" of water, reopened tool with very faint blow, increased to very weak, 1" water, remained steady to end. Rec. 490' drilling mud, no gas, oil or water. Pressures:

IHP	2969 psi	15 min.
IFP	159-186	15 min.
ISIP	1989	60 min.
FFP	212-239	60 min.
FSIP	2002	120 min.
FHP	2955	
BHT	126	

Sample Chamber Recovery: Pressure - trace, 6 milliliters of mud, no gas, oil or water, very tight.

11-13-79 Depth 5840', circ. & cond. hole. Fm. lime. MW 10, Vis. 40, WL 9, PH 11.5, FC 2/32, Chl. 1400. Bit #13: 7-7/8" J-33, 155' in 18 1/2 hrs. WOB 40,000#, 50 RPM, 1100 PP, 58 SPM. Rig time: Drilling 18 1/2 hrs., tripping 2 1/2 hrs., rig serv. 1/4 hr., circ. & cond. hole 2 1/2 hrs., wash & ream 1/2 hr. Coming out of hole for logs, Schlumberger on location.

11-14-79 T.D. 5820'. Running DST #2. MW 10, Vis. 45, WL 8, PH 11, FC 2/32, Chl. 1400. Dev. 1' @ 5820'. Rig time: Tripping 6 1/2 hrs., logging 9 1/2 hrs., WO test tool 3 1/2 hrs., PU test tool 2 hrs., testing 2 1/2 hrs.

Schlumberger Log tops:

Ismay	5458'	
Lower Ismay	5572'	
Paradox Sh.	5636'	
Desert Creek	5678'	(-1041)
Base Desert Creek	5778'	
T.D.	5820'	

Log calculations

Lower Ismay	5590-5618'	4% porosity, 100% water
	5620-5626	22% porosity, 100% water
Desert Creek	5734-5738'	Rt 8 ohms, 11% porosity, 79% water

Note: This zone (Desert Creek) not equivalent to productive zone in #1-24 Federal well.



Daily Report - Page Five

11-14-79 (Continued)

DST #2, 5700-5820' (Desert Creek Zone)

IF (10 min.), weak blow, increased to good blow. SI 60 min. FF 60 min., weak blow increased to strong in 25 min., steady to end of test. Recovered 864' fluid including: 188' mud, 94' slightly gas cut muddy water, 578' slightly gas cut salt water.

IHP 2667 psi

IFP 26-66

ISIP 1571

FFP 79-197

FSIP 1571

FHP 2666

BHT 134°

Sample Chamber at 50 psi: trace gas, 1400 cc. slightly muddy salt water  
(Rw = .12 @ 62°)

11-15-79 T.D. 5820', laying down drill pipe, plugging well. MW 10, Vis 45, WL 9, PH 11, FC 2/32, Chl. 1100. Time: Tripping 6 hrs., testing 3 hrs., rig serv. 1/4 hr., LD test tool 2 hrs., WOO 2-3/4 hrs., LD drill collar 1 1/2 hr., WO Halliburton 1/2 hr., LD drill pipe 1/2 hr.

11-16-79 T.D. 5820', rigging down. Rig released 2:00 P.M. 11-15-79. Time: WO Halliburton 1 1/4 hrs., lay down drill pipe, cement & plug well 9-3/4 hrs., rig down 13 hrs.

Well plugged as follows:

5600-5700' 35 sx.

4500-5600' 35 sx.

1500-1600' 35 sx.

525- 625' 35 sx.

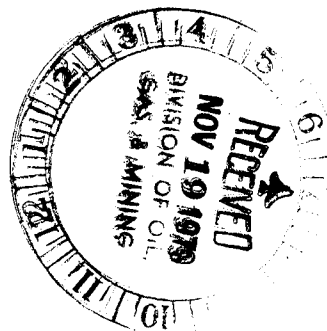
200- 250' 35 sx.

Surface (w/marker) 10 sx.

185 sx. total cement

FINAL REPORT

yeah!



November 6, 1979

MEMORANDUM

TO: File

FROM: Michael T. Minder *MM.*  
Geological Engineer  
Division of Oil, Gas  
and Mining

Re: William W. Whitley  
Well No. Federal #1-18  
Sec. 18, T. 40S, R. 23E.,  
San Juan County, Utah

Cactus Drilling Company rig #20 is presently drilling at a depth of 5200'. There are no shows as yet, and drilling is proceeding smoothly.

The site is clean, the equipment is in fair shape and the house keeping is good. The pits and site are stable and appear to be adequate. They propose to TD the well at 5800' - 5900'.

cc: USGS - Durango

P&A

WILLIAM W. WHITLEY

#1-18 Federal  
Section 18, T40S - R23E  
San Juan County, Utah

## CONTENTS

SUMMARY	1
FORMATION TOPS	3
DRILL STEM TESTS	4
BIT RECORD	6
DEVIATION RECORD	7
PLUGGING RECORD - 1	7
CHRONOLOGICAL SUMMARY	8
REMARKS	9
SAMPLE DESCRIPTION	10

SUMMARY

WELL NAME: William W. Whitley  
#1-18 Federal

WELL LOCATION: SW SW $\frac{1}{4}$  Section 18, T40S - R23E  
(513' F.W.L. & 743' F.S.L.)  
San Juan County, Utah

TYPE: Wildcat

ELEVATION: 4625 feet - Ground  
4637 feet - Kelly Bushing

TOTAL DEPTH: 5840 feet - Driller  
5819 feet - Schlumberger

GEOLOGIST: Achille Vitali, Jr.  
6670 West 28th Avenue  
Denver, Colorado 80214

CONTRACTOR: Cactus Drilling Corporation  
Farmington, New Mexico  
Rig 20 - Brewster N-45  
Pump #1 - Emsco D-550  
Pump #2 - Emsco D-300  
Pusher - Joe Vaughn

COMMENCED: Spudded - 11:00 AM; October 14, 1979

COMPLETED: Finished drilling - 12:15 AM; November 13, 1979  
Logged with Schlumberger - November 13, 1979  
Ran Drill Stem Test #2 - November 14, 1979  
Plugged and abandoned - November 14 & 15, 1979

CASING RECORD:

Surface Casing

Landed 5 joints of K-55, 48#, 13 3/8 inch casing at 225 feet kb. Cemented casing with 225 sacks of type 'B' cement containing 2% calcium chloride and 1/4# flocele per sack.

LOGGING RECORD:

Samples

Caught

250' - 1000'  
4200' - 5840'

Described

250' - 1000'  
4200' - 5840'

Drilling Time

Geologist

250' - 5840'

Mechanical Log  
Schlumberger

Dual Induction - S.F.L. Log

228' - 5813'

Compensated Neutron  
Formation Density Log

3819' - 5819'

FORMATION TOPS

<u>FORMATION AND AGE</u>	<u>SAMPLE TOPS</u>	<u>LOG TOPS</u>	<u>DATUM</u>
<u>Jurassic</u>			
Morrison Formation	Surface	Surface	+4625'
Entrada Formation	- - -	463'	+4174'
Carmel Formation	- - -	510'	+4127'
<u>Triassic</u>			
Navajo Formation	575'	575'	+4062'
Kayenta Formation	- - -	1090'	+3547'
Wingate Formation	- - -	1175'	+3462'
Chinle Formation	- - -	1550'	+3087'
Shinarump Formation	- - -	2315'	+2322'
Moenkopi Formation	- - -	2370'	+2267'
<u>Permian</u>			
Cutler Formation	- - -	2598'	+2039'
<u>Pennsylvanian</u>			
Hermosa Formation	4600'	4582'	+ 55'
Paradox Formation	+5320'	5306'	- 669'
Ismay Member	+5500'	5458'	- 821'
Desert Creek Member	+5700'	5676'	-1039'

DRILL STEM TESTS

Drill Stem Test #1      5550' to 5685' (135')      Ismay Zone

Halliburton Testers. Bottom Anchor. Opened tool. Packers did not hold. Lost mud immediately. Pulled up and reset tool. Reopened with repeat of above. Missrun.

Drill Stem Test #1-A      5565' to 6585' (120')      Ismay Zone

Halliburton Testers. Bottom Anchor. Tool opened with faint blow that increased to weak (3 inches of water). Reopened tool with very faint blow that increased to very weak (1 inch of water). Remained steady to end.

Recovered: 490 feet drilling mud - no gas, oil or water.

<u>Pressure</u>		<u>Time</u>
IHP	2969#	
IFP	159/186#	15 minutes
ISIP	1989#	60 minutes
2nd FP	212/239#	60 minutes
FSIP	2002#	120 minutes
FHP	2955#	
Temperature	126°F.	

Sample Chamber Recovery:	Pressure	Trace
		600 milliliter of mud
		No gas, oil or water

(Note: Drill Stem Test #1 and Drill Stem Test #1-A should be adjusted upward a minimum of 20 feet to more nearly conform with 'E' log depths.)

Drill Stem Test #2      5700' - 5820' (120')      Desert Creek

Halliburton Testers. Bottom Anchor. Tool opened with very weak blow increasing steadily to good blow (10 inches water) at end. Re-opened tool with weak blow that increased to strong in 25 minutes. Remained steady to end.

Recovered: 864 feet fluid consisting of; 188 feet mud, 94 feet muddy slightly gas cut water, 364 feet slightly gas cut salt water, 214 feet slightly gas cut muddy salt water and mud.

Pressures

Time

IHP	2667#	
IFP	26/66#	10 minutes
ISIP	1571#	60 minutes
2nd FP	79/197#	60 minutes
FSIP	1571#	120 minutes
FHP	2666#	

Temperature

134°F.

Sample Chamber Recovery:

Pressure      50#

trace gas

1400 cc slightly muddy salt water

Rw .12 ohms at 62°F.

BIT RECORD

<u>NO</u>	<u>SIZE</u>	<u>MAKE</u>	<u>TYPE</u>	<u>DEPTH OUT</u>	<u>FEET</u>	<u>HOURS</u>	<u>PUMP PRESS.</u>
1	17 2/3	HTC	OSC	218'	218'	18 1/2	400#
2	8 3/4	HTC	OSC1G-J	1244'	1026'	12	1000#
3	7 7/8	HTC	OSC1G-J	1776'	532'	13 1/2	1200#
4	7 7/8	HTC	J22-J	2840'	1064'	-	1200#
5	7 7/8	HTC	J-33	2840'	Washing & Reaming		
6	7 7/8	HTC	J22-J	2840'	Washing & Reaming		
7	7 7/8	HTC	OSC1G-J	2840'	Washing & Reaming		
8	7 7/8	Smith	V2H-J	2975'	135'	-	1200#
9	7 7/8	HTC	J33-J	4152'	1177'	132 3/4	1200#
10	7 7/8	Smith	F3-J	4765'	613'	70 1/2	700 - 1000#
11	7 7/8	Smith	F3-J	5581'	816'	91	1200#
12	7 7/8	HTC	J33(RR9)	5685'	104'	11	1200#
13	7 7/8	HTC	J33-J	5840'	155'	17 1/2	1200#

### DEVIATION RECORD

<u>DEPTH</u>	<u>DEVIATION</u>
218'	0°
710'	1/4°
1212'	1/4°
1618'	1 1/2°
2972'	3/4°
3567'	1°
3883'	1°
4152'	1°
4670'	1 1/4°
4765'	1/2°
5840'	1°

### PLUGGING RECORD

Verbal permission to plug was obtained from Mr. Jerry Long of the U.S.G.S. office in Durango, Colorado at 3:10 PM on the 14th day of November 1979.

Mr. Long recommended the following program:

<u>Depth of Plug</u>	<u>Sacks of Cement</u>
5600' - 5700'	35 sacks
4500' - 4600'	35 sacks
1500' - 1600'	35 sacks
525' - 625'	35 sacks
200' - 250'	35 sacks
Surface Marker	10 sacks

### CHRONOLOGICAL SUMMARY

October 13 - 14	Moved in and rigged up. Spudded at 11:00 AM on 14th. Drilling surface hole.
October 15	Finished surface hole. Ran surface casing. Waiting on cement. Nippled up.
October 16	Drilled out at 2:30 AM. Drilling ahead.
October 17 - 18	Drilling ahead. Twisted off on the 18th. Recovered fish. Drilling ahead by 4:30 PM.
October 19	Drilling ahead.
October 20	Backed off 1 joint and 14 stands. Recovered fish by 5:15 AM. Washed and reamed. Conditioned hole.
October 21 - 22	Working to bottom. Washed and reamed. Conditioned hole.
October 23	As above. Fishing for 36 inch pipe wrench with globe basket. No recovery.
October 24	In hole with mill. Milling on junk.
October 25	Washed and reamed to bottom. Drilling ahead at 6:00 PM.
October 26 - 31	Drilling ahead.
November 1 - 10	Drilling ahead.
November 11	Ran Drill Stem Test #1 and #1-A. (Ismay Zone)
November 12	Drilling ahead.
November 13	Reached T.D. at 12:15 midnight. Ran Schlumberger Logs.
November 14	Ran Drill Stem Test #2. (Desert Creek Zone)
November 15	Plugged and abandoned hole.

## REMARKS

### HYDROCARBON EVALUATION

#### Lower Ismay Zone

The primary objective (Lower Ismay Zone 5572' to 5636') was found in samples and confirmed by Drill Stem Test results and 'E' log analysis to be tight and nonproductive.

#### Desert Creek Zone

Recovery of a considerable quality of salt water (Drill Stem Test #2 - 5700' to 5820') with no oil confirms the 'E' log analysis of the water bearing nature of the Desert Creek Zone porosity.

All other sands and carbonates penetrated are believed to be tight and/or water bearing.

### OPERATIONS

Daily operations were conducted in good spirits.

The samples were taken to American Stratigraphic Company of Denver, Colorado for preservation and storage.

Achille Vitali, Jr.  
Geologist

WILLIAM W. WHITLEY

#1-18 Federal  
SW SW $\frac{1}{4}$  (513' F.W.L. & 743' F.S.L.)  
Section 18, T40S - R23E  
San Juan County, Utah

SAMPLE DESCRIPTION

(Note: Samples not lagged unless otherwise noted.)

<u>FROM</u>	<u>TO</u>	<u>IN MORRISON FORMATION</u>
250'	370'	Sandstone, white to predominately faded orange, fine to medium grain with abundant coarse grain, angular, mostly sub-angular, some sub-round, occasionally round, loose, friable to firm, light to medium clay matrix.
370'	460'	Sandstone, white to faint faded orange, predominately very fine to fine grain, angular to sub-angular, occasionally medium to coarse grain, sub-round to round grains, loose to friable.
460'	490'	Missed.

ENTRADA - CARMEL FORMATIONS (?)

490'	580'	Siltstone, bright orange to orange red, very finely sandy and with abundant clay matrix, calcareous.
------	------	--

NAVAJO FORMATION  $\pm$ 575' Drilling Break

580'	700'	Sandstone, white to very faint orange in part, very fine to fine grain, angular to sub-angular, with abundant medium to coarse sub-round to round grains, some frosted, loose to friable clusters.
700'	790'	Sandstone, light orange, fine to medium grain, sub-angular to sub-round, plus abundant coarse sub-round to round grain, predominately loose, some friable.
790'	820'	Sandstone, light orange, very fine to fine grain, friable, angular to sub-angular, medium to coarse grain common, sub-round, loose.
820'	850'	60% Sandstone, light to medium orange, very fine to fine grain, angular to sub-angular, friable to slightly firm, medium and coarse grain rare, 20% Glay flakes, white, in part calcareous to limy, plus 20% Shale, bright medium to dark orange red, silty in part, slightly calcareous.

Sample Description  
#1-18 Federal

<u>FROM</u>	<u>TO</u>	
850'	910'	Sandstone, bright dark orange to orange red, very fine grain, angular to sub-angular, friable to slightly firm, slightly calcareous to calcareous, plus heavy trace fine to medium to coarse sub-angular to sub-round loose grains, plus trace Clay, white type as above.
910'	940'	Sandstone, bright dark orange to orange red, very fine grain, angular, friable to slightly firm, slightly calcareous, rare trace Clay, white type.
940'	1000'	Sandstone, bright medium orange, very fine grain, angular to sub-angular, friable to slightly firm, slightly calcareous, heavy traces to 5% Shale, bright orange red, slightly calcareous to calcareous, soft.

\*\*\*\*\*

IN CUTLER - RICO FORMATION

4200'	4210'	Shale, orange red to brick red, brown, clay type, soft, very slightly calcareous in part, plus 20% Siltstone, off-white to light gray to brown, very finely sandy in part, calcareous, firm, shaly in part, plus 20% Limestone, white, very light to medium gray, pinkish to light brown, in part very finely sandy, dense, plus trace Gypsum, clear, crystalline.
4210'	4250'	Shale, brown, occasionally slight mottling with gray, clay type, soft, flaky to blocky, calcareous, in part silty and finely sandy grading to sandy Siltstone, grading to argillaceous silty Sandstone, very fine grain, slightly firm, slightly calcareous to calcareous, plus abundant Shale, orange to brick red, salmon, as above, occasional traces Shale, medium gray blue, all clay type, plus light to heavy trace Limestone, very light gray to tan to light brown, dense, plus trace Gypsum crystals.
4250'	4300'	Predominately Shale grading to Siltstone, light to medium brown, slightly sandy to very sandy, (very fine grain type), soft to firm, calcareous to very calcareous, occasionally finely micaceous, plus some Shale, orange to brick red, clay type, soft, plus trace Siltstone, gray, very finely sandy, calcareous, plus traces Limestone, light gray to tan to off-white, occasional salmon, soft to firm, dense.

Sample Description  
18 Federal

<u>FROM</u>	<u>TO</u>	
4300'	4350'	60 to 70% Shale, brown, slightly silty and occasionally very finely sandy, all slightly calcareous to calcareous, plus 30% Shale, orange to brick red, salmon, calcareous, soft clay type, traces brown purple, occasionally silty in part, plus traces Limestone, off-white to light to medium gray, occasionally tan to brown, occasional trace Gypsum, clear to white, associated with orange to brick red Shales, plus trace Shale, medium gray purple, soft, sub-waxy clay type.
4350'	4380'	Shale, brown, as above, becoming in part silty and finely sandy, grading to Siltstone, brown, very finely sandy, calcareous, firm, plus heavy trace Shale, orange and brick red clay type as above, occasional trace Limestone, pink, off-white to light gray, dense, plus trace Gypsum, white, crystalline.
4380'	4400'	Predominately Shale, brown clay type, in part with some gray mottling, plus increase in Shale, orange to brick red clay type, as above, heavy traces Siltstone, brown, very finely sandy, calcareous, very finely micaceous, trace Limestone, off-white to light tan, chalky, some dense, firm, plus trace Gypsum, crystalline, clear to white.
4400'	4450'	Shale, brown, clay type, soft flaky to blocky, slightly calcareous, occasionally micaceous, occasionally silty, in part slight mottling with light to medium gray, plus heavy trace to 5% Shale, light to medium gray, sub-waxy, soft plus 10 to 15% Shale, orange to brick red clay type, occasionally to 15% Shale, orange to brick red clay type, occasionally with Gypsum inclusions, plus 5 to 10% Limestone, white to light gray, occasional gray tan, chalky in part, dense.
4450'	4500'	Shale, brown, as above with increase in medium gray mottling, plus rest Shales as above, with very heavy trace to 5% Limestone, as above.
4500'	4530'	50 to 60% Shale, brown type as above, mottling with gray as above, plus 5 to 10% Shale, medium to dark gray, sub-waxy as above, plus 10% Shale, brick to orange red, as above, plus abundant Siltstone, off-white to brown, very finely sandy, firm, calcareous, argillaceous in part, plus 10 to 15% Limestone, off-white to very light gray, dense to crypto-crystalline, chalky in part in 4500-4510 foot sample fading off to heavy trace to 5% in rest of samples.

Sample Description  
#1-18 Federal

<u>FROM</u>	<u>TO</u>	
4530'	4550'	40 to 50% Shale, brown as above with 10 to 20% mottled with medium to dark gray, 15 to 20% Shale, medium gray blue to dark gray, sub-waxy, plus 10% Shale, reds as above, plus 30% Siltstone, white to very light gray, occasionally to brown, very finely sandy, firm, blocky, very calcareous, plus 5% Limestone, off-white to very light gray, tan, as above.
4550'	4560'	50% Siltstone, predominately very light gray, occasionally some brown and light orange, very finely sandy, firm, calcareous to very calcareous, occasionally micaceous, plus rest as above.
4560'	4570'	30% Siltstone, as above, rest Shale, as above, plus 5 to 10% Limestone, off-white to very light gray, as above.
4570'	4580'	20 to 25% Siltstone, as above becoming predominately brownish, plus medium gray type, plus rest predominately Shale, brown type in part, micaceous, plus Shales, as above, plus heavy traces Limestone, as above.
4580'	4600'	40% Shale, very light green, soft, sub-waxy, plus abundant Shale, brown as above, plus 20% Siltstone, off-white to very light gray, finely sandy, friable to firm, calcareous to very calcareous, plus 10% Siltstone, light to medium brown, occasionally micaceous, argillaceous, calcareous, plus heavy traces to 5% Limestone, white, chalky and light gray firm type.

HERMOSA FORMATION

4600'	4610'	50% Limestone, off-white to light gray, dense, firm, some chalky and soft, tabular to blocky, plus rest as above.
4610'	4620'	Limestone, very light to light gray, dense to crystalline (minor), occasionally some chalky, tight.
4620'	4630'	Limestone, as above, 50% grading to Sandstone, white to very light gray, very fine grain, angular, limy, tight.
4630'	4650'	Limestone, as above, 10 to 15% very finely sandy grading to Sandstone, as above.
4650'	4660'	Limestone, as above, trace sandy type.
4660'	4670'	Limestone, as above, good fraction light to medium gray with olive or brown cast.

Sample Description  
18 Federal

<u>FROM</u>	<u>TO</u>	
4670'	4690'	Limestone, as above, 20% Sandstone, very light to medium gray, very fine grain, very limy, occasionally finely micaceous, firm to hard, tight, trace Chert in 4680-90 foot sample, light gray to tan, flaky.
4690'	4700'	70% Sandstone, white to very light gray, occasionally to medium gray, very fine grain, angular, friable to slightly hard, very limy, occasionally finely micaceous, tight, plus Limestone, white, soft, chalky, flaky.
4700'	4710'	Sandstone, white, very fine grain with some very fine to fine grain, angular, friable to very firm, slightly calcareous to very calcareous, looks tight with some fair porosity and permeability, No Show.
4710'	4720'	Sandstone, white, very fine grain, angular, friable to firm, calcareous to limy, grading to 30% Limestone, white to light gray, in part sandy, some chalky grading to dense.
4720'	4730'	Limestone, off-white to very light gray with buff cast, dense, flaky, plus 40% Shale, light faded green, soft, sub-waxy, occasionally finely pyritic, plus trace Chert, faint tan, plus abundant Shale, reds and gray as above.
4730'	4740'	Dolomitic Limestone, off-white to light gray with some tan gray to tan, probably mottled, dense to crystalline, no porosity and permeability, flaky to tabular, plus abundant Shale, brown and chocolate with medium to dark gray mottling, clay type.
4740'	4750'	70% Shale, as above, plus 30% Limestone and Dolomitic Limestone as above.
4750'	4760'	25% Chert, amber to light orange, flaky to blocky, 30% Sandstone, white to light medium gray, very fine grain, angular, firm to slightly hard, very calcareous to limy, plus 10% Limestone, white, chalky, plus rest Shales, as above.
4760'	4770'	40% Limestone, white, (in part chalky) and light gray olive (dolomitic) dense, blocky, plus rest Shale, green, reds, brown and chocolate, caving(?).
4770'	4790'	Limestone, medium gray buff to tan and medium gray with brown olive cast, dense, tabular to blocky, mottled with Limestone, off-white to cream, in part soft and chalky.

Sample Description  
#1-18 Federal

FROM	TO	
4790'	4800'	50% Siltstone, light to medium brown, very finely sandy in part, firm to slightly hard, calcareous, in part argillaceous, grading to Shale, medium to dark brown, in part with slight purple cast and occasionally mottled with light gray, occasionally silty, calcareous, plus 10% Limestone, as above.
4800'	4810'	Siltstone, tan to light brown with slight reddish cast, very finely sandy, firm to hard, calcareous to limy, occasionally very finely micaceous, grading to Limestone, (dolomitic?), light gray to tan to brown, silty and shaly, chalky to dense, soft to hard, plus Shale, brown and chocolate, silty, micaceous in part.
4810'	4820'	70% Siltstone, brown as above, grading to/and interlaminated with Shale, brown and chocolate, often mottled with gray, clay type.
4820'	4840'	40% Shale, light green, rest Siltstone and Shale, as above, plus 10% Sandstone, white to faint orange, very fine to fine grain, angular to sub-round, friable to firm, calcareous, looks tight.
4840'	4850'	40% Limestone, medium gray, dense, firm, some off-white to light gray, chalky, plus rest Shales and Siltstone as above, plus 5% Sandstone, as above.
4850'	4860'	Limestone, white to very light gray, chalky in large part, some dense, occasionally finely sandy grading to Limestone, light gray, finely sandy, firm, hard, blocky.
4860'	4870'	80% Limestone as above, plus rest Siltstone, light to medium reddish brown, very finely sandy grading to Limestone, light to medium reddish brown, silty and argillaceous, soft and chalky in part.
4870'	4900'	Limestone, light to medium brown, in part with reddish cast, silty and finely sandy in part, grading to Siltstone, light to medium reddish brown, calcareous to limy, in part very finely sandy, argillaceous in part, occasionally finely micaceous, grading to/and interlaminated with Shale, brown clay type, occasionally finely silty and micaceous, calcareous.
4900'	4910'	50% Limestone, as above, grading to Siltstone and Shale, as above, plus 50% Limestone, off-white to very light gray, chalky to dense, grading to Sandstone, white to very light gray, very fine grain, tight.

Sample Description  
1-18 Federal

<u>FROM</u>	<u>TO</u>	
4910'	4920'	Sandstone, off-white to very light gray, limy, very fine grain, firm to hard grading to/and interlaminated with Limestone, white to chalky to dense, trace microfossils.
4920'	4940'	Shale, medium gray and brown-chocolate, some mottlings of same, soft, sub-waxy in part, flaky and lumpy.
4940'	4950'	Shale, predominately brown-chocolate, with some mottling of light to medium gray, clay type as above, plus 30% Siltstone, medium brown, very finely sandy in part, calcareous to limy, grading to Limestone, light brown, shaly and silty, plus 10% Limestone, light gray, dense, blocky.
4950'	4960'	Limestone, off-white to very light gray, chalky flakes, soft, some very light gray, dense, firm, grading to very finely sandy Limestone, very light gray, grading to Sandstone, very light gray, very fine grain, limy, in part tinged with red cast.
4960'	4970'	Limestone, very light to light gray, very finely sandy in part, microcrystalline, often very faint buff to reddish tinge, occasionally finely micaceous, grading to Sandstone, very light to light gray with reddish tinge, very fine grain, firm, limy, very finely micaceous.
4970'	5000'	Shale, medium gray and medium gray with brown and chocolate mottling grading to chocolate and brown clay, sub-waxy, soft, plus some Shale, medium gray, earthy, calcareous type plus heavy trace to 5% Limestone, off-white to light gray and tan gray, dense, blocky.
5000'	5010'	Shale, orange and brick red, brown and gray as above, plus 5 to 10% Limestone, off-white to very light gray, chalky to dense, trace Chert, cloudy, translucent.
(Note: Samples 4970 to 5010 feet poor. Drilled with hole in pipe.)		
5010'	5020'	40% Limestone, off-white to very light gray, dense to some chalky, heavy trace Sandstone, white, fine grain, angular to sub-angular, friable to firm, calcareous, tight looking, rest Shale, as above.
5020'	5040'	90% Shales, brown reds and grays as above, plus rest Limestone, very light gray, firm to dense.

Sample Description  
1-18 Federal

<u>FROM</u>	<u>TO</u>	
5040'	5050'	Limestone, white, in part very finely sandy grading to 50% Sandstone, white, very fine grain to fine grain, angular, limy, flaky, brittle, very tight, very heavy trace Chert, clear to cloudy, flaky.
5050'	5060'	Limestone, white to very light gray, in part very finely sandy, in part fossiliferous looking, grading to 20% Sandstone, as above, plus heavy trace Chert as above.
5060'	5070'	Limestone, off-white to light gray, with olive cast in part, predominately dense, tabular to blocky, some chalky.
5070'	5100'	Limestone, light to medium to dark gray, tabular to blocky, dense to cryptocrystalline, in part slightly shale, occasionally streaked with very fine grain sand, heavy trace Mica.
5100'	5120'	Dolomitic Limestone to Limestone, predominately light to medium gray, dense to cryptocrystalline, in part microcrystalline, tight.
5120'	5140'	Limestone, off-white to very light gray with faint olive tinge, dense, tabular to blocky, heavy trace Chert in 5120-30 foot sample, clear to faint amber.
5140'	5150'	70% Limestone, off-white to very light gray olive, some crystalline as above, plus heavy trace Chert as above, plus Dolomitic Limestone, medium to dark gray to black, shaly in part, earthy, firm to hard.
5150'	5170'	Limestone, predominately very dark gray to black, in part shaly, firm to hard, brittle, plus some light to medium gray, cryptocrystalline.
5170'	5190'	Limestone, light to medium gray (small fraction dark gray to black, as above), cryptocrystalline to very fine microcrystalline, occasionally very finely sandy, occasional traces very finely micaceous, traces Fossil (crinoid stems?).
5190'	5200'	Limestone, white with faint olive cast, lithographic, tabular, hard, brittle, occasionally some chalky, plus 5 to 10% Chert, clear to slightly milky transparent to translucent, brittle.
5200'	5210'	Limestone, very light gray with faint olive cast in part, lithographic, tabular to blocky, brittle, occasionally some chalky, plus heavy trace to 5% Chert, light amber.
5210'	5240'	Limestone, medium to dark gray to black, in part dolomitic, dense to cryptocrystalline, shaly in part.

Sample Description  
18 Federal

<u>FROM</u>	<u>TO</u>	
5240'	5250'	Limestone, off-white, predominately chalky, light olive, dense, hard, brittle, plus 20% Limestone, dark gray to black as above, grading to in part Shale, black, limy.
5250'	5280'	Limestone, very light to light gray, chalky and soft in part, mostly dense and firm, interlaminated with some Limestone, faint to light olive buff, dense to tabular, brittle, heavy trace Chert, clear to slightly milky in 5260-70 foot sample.
5280'	5290'	Limestone, as above, becoming medium gray in large part.
5290'	5300'	Limestone, off-white to very light gray, predominately very lightly and very finely sandy grading in part to sandy, flaky to tabular.
5300'	5310'	Limestone, as above, less sandy, plus trace Chert, clear to slightly milky.
5310'	5320'	70% Shale, medium to dark gray, very calcareous to limy, flaky to sub-fissile, plus 30% Limestone, as above.
5320'	5330'	70% Limestone, off-white, chalky looking in large part, plus 30% Shale, dark gray, very calcareous to limy, flaky to sub-fissile.
5330'	5340'	70% Limestone, off-white to light gray with olive cast, dense to some slightly chalky, plus 15% Siltstone, medium gray, soft to firm, calcareous, shaly, plus 15% Shale, as above, (occasional trace black sooty type).
5340'	5350'	70% Limestone, as above, some tan to light brown, dense plus 10% Siltstone, as above, streaks light gray green to green, in part finely micaceous, plus Shale, medium to dark gray, silty in part with light blue cast, plus heavy trace Shale, medium gray with green cast, calcareous.
<u>PARADOX FORMATION (?)</u>		
5350'	5390'	Limestone, off-white to very light gray buff, dense to cryptocrystalline, tabular to blocky, some slightly chalky, 5 to 25% very faint gold mineral fluorescence, no cut, occasional traces Chert, clear to cloudy to amber, plus trace Shale, medium to dark gray, flaky, calcareous to limy, brittle.
5390'	5400'	60% Limestone, as above, plus 40% Shale, dark to very dark gray, flaky, sub-fissile to fissile.

Sample Description  
#1-18 Federal

<u>FROM</u>	<u>TO</u>	
5400'	5410'	60% Shale, as above, trace black, plus 30% Limestone, as above, with some tan to light brown, plus 5% Chert, tan gray, translucent flaky.
5410'	5450'	Limestone, off-white to faint gray buff, tabular to slightly blocky, firm, brittle, some slightly chalky to chalky, soft, all dense, plus 5% Chert, tan to light brown in 5410-20 foot sample (traces in rest).
5450'	5470'	Limestone, very light gray to light gray buff, mostly lithographic, occasionally some cryptocrystalline, blocky and chunky, very faint gold mineral fluorescence, trace Chert, clear to light brown.
5470'	5480'	Limestone, as above, some tan, plus 25% Shale, medium gray (silty) to very dark gray, slightly calcareous to calcareous, fissile.
5480'	5500'	60 to 70% Shale, as above, with 15% fraction being black, grainy looking and limy, plus 30 to 40% Limestone, light to medium gray, tan to light brown, dense, tabular to blocky, plus light to heavy trace Chert, clear, light gray and light brown.
<u>ISMAY ZONE</u>		
5500'	5510'	70% Limestone, very light to light gray, some medium gray and dark gray brown, dense to cryptocrystalline, some chalky, rare Pyrite crystals plus 30% Shales as above.
5510'	5550'	Limestone, off-white to very light gray to occasionally light gray, dense to cryptocrystalline, tabular to blocky, some chalky, soft.
5550'	5560'	Limestone, very light gray grading in part to medium gray, rest as above.
5560'	5570'	Limestone, very light gray to medium gray, often sploched, speckled and mottled with dark gray and black, some slightly shaly looking, abundant chalky, some dense to cryptocrystalline, tabular to blocky, traces appear fossiliferous, plus Chert, dark brown, 1 to 2% light bright yellow fluorescence, instant bright yellow-white cut on best pieces.
5570'	5580'	Limestone, abundant off-white to very light gray chalky type, mostly light to medium gray with mottling and speckling of dark gray to black as above, small fraction dark gray to brown black, trace Fossil fragments, 10 to 15% fluorescence, very light to bright yellow, occasional cut as above, mostly delayed crushed type, plus heavy trace Chert, medium to dark brown.

Sample Description  
#1-18 Federal

<u>FROM</u>	<u>TO</u>	
5580'	5590'	(poor sample) Limestone, mostly light to dark brown and brown black, occasional trace Fossil evidence, dense and hard to cryptocrystalline, plus some light to medium gray, as above, some medium gray, shaly and earthy, plus Shale, medium to dark gray, fissile, flaky, calcareous in part, finely micaceous, trace Chert, brown, 5% light gold fluorescence with occasional spots yellow fluorescence.
5590'	5600'	Limestone, medium to dark gray brown to dark brown, in part fossiliferous, dense and hard to cryptocrystalline, some slightly earthy and chalky, trace Calcite healed fraction, considerable fraction Shale, medium gray, finely micaceous to blocky, flaky to fissile, calcareous, plus heavy amber to brown, in part translucent, 15% faint gold fluorescence with traces light yellow-blue faint crushed cut on best pieces, bright yellow-white fluorescence on long delayed cut.
<u>LOWER ISMAY ZONE (?)</u>		
5600'	5610'	Limestone, light to medium to dark gray, predominately dense to cryptocrystalline, tabular to blocky, some chalky, soft, very heavy trace Chert, light to very dark brown and brown-black, 5% spotty light yellow fluorescence, best pieces have good yellow delayed crushed cut, trace free Calcite.
5610'	5620'	Limestone, off-white, chalky, mostly light gray with buff cast, some medium to dark gray brown to brown black, dense to cryptocrystalline, abundant Chert, faint gray, milky to tan, all translucent, 10% very faint yellow fluorescence to trace faint yellow fluorescence, very faint cut on best pieces.
5620'	5630'	Limestone, more of off-white to very light gray, light to medium gray, some light gray brown, chalky, dense to cryptocrystalline, occasionally some crystalline, traces vugs partly or completely Calcite filled, traces free Calcite crystals, abundant Chert, clear, cloudy to very light gray, 25% bright yellow fluorescence, predominately in chalky type, in Calcite and coarse crystalline type, very light yellow crushed cut.
5630'	5670'	Limestone, off-white to very light gray, predominately some very light to light gray, chalky to cryptocrystalline, soft to firm, largely tabular, occasionally vugular in part with Calcite filling, rare pin point porosity, mostly tight looking, light to heavy traces free Calcite, light to heavy trace Chert, clear to slightly milky to light gray tan, 30 to 40% light bright yellow fluorescence plus 20 to 30% faint gold fluorescence, bright yellow-white delayed and/or crushed cut on best pieces.

Sample Description  
1-18 Federal

FROM	TO	'C' SHALE
5670'	5680'	70% Limestone, very light gray, pin point porosity more common, rest as above, plus 30% Shale, very dark gray to black, in part very limy, some granular and sooty looking, tabular to thickly flaky.
5680'	5685'	50% Shale, as above, 50% Limestone, light gray, in part earthy looking, rest as above, 15 to 20% fluorescence as above.
	5685'	<u>30 and 60 Minute Circulation Samples</u>  Shale, black, grainy and carbonaceous looking, very calcareous, soft to firm and brittle, tabular to blocky, stains water brown-black.
5685'	5690'	Shale, as above.
		<u>DESERT CREEK ZONE</u>
5690'	5700'	Predominately Shale, as above, intermixed with Dolomitic Limestone and Limestone, medium to dark gray and gray with brown cast, dense, slightly shaly in part, firm to hard, some soft earthy looking, all tight, No Show.
5700'	5710'	50% Limestone, some slightly dolomitic, medium gray to dark gray, gray brown and medium brown, dense to cryptocrystalline, hard, brittle, chunky, some soft, shaly, earthy, trace Fossils plus 50% Shale, as above.
5710'	5720'	Predominately Limestone, trace off-white, chalky, predominately medium to dark gray, cryptocrystalline, firm to hard, occasionally very finely sandy, shaly in part, tight, No Show, plus heavy trace Anhydrite, light to medium gray, grainy looking, soft to firm, slightly calcareous, plus abundant Shale, as above, trace Chert, medium brown, translucent.
5720'	5730'	Anhydrite, mostly medium gray, some light to dark gray, very finely grainy looking, in part mottled off-white, occasionally mottled white with fibrous Gypsum crystals, some soft white hydrated, mostly chunky, round edges, plus fraction black Shale, as above.
5730'	5740'	Limestone to Dolomitic Limestone, medium to dark gray, some dark gray brown, cryptocrystalline, hard, brittle, flaky to thinly tabular, occasionally blocky, in part shaly and earthy looking, plus 20 to 25% Anhydrite as above, plus abundant Shale, black, as above.

Sample Description

-18 Federal

<u>FROM</u>	<u>TO</u>	
5740'	5750'	Limestone, off-white to very light gray, some with faint buff cast, thinly tabular, chalky and soft to dense and brittle, rare Calcite filled vugs, trace very faint gold mineral fluorescence plus 20% Shale, black as above, plus trace Limestone as above.
5750'	5770'	Limestone, off-white to very light gray, thinly tabular to flaky, some chalky, mostly dense, trace coarse crystalline, and firm, brittle, rare evidence Calcite, filled vugs, rare trace Fossils (Fusulinid), some very faint gold mineral fluorescence, 1 piece bright yellow fluorescence, light gray with brown stain, vuggy and pin point porosity, good yellow cut.
5770'	5780'	Limestone, as above, some with very faint buff cast, 20% very faint gold mineral fluorescence, 5% very faint to heavy trace spotty bright yellow fluorescence.
5780'	5790'	Limestone, some in part dolomitic, white to faint buff, some very light gray, chalky to dense to cryptocrystalline, trace scattered microcrystalline, blocky to thickly tabular, vugs rare to common, Calcite encrusted or filled, occasional free Calcite, 5% faint to light yellow fluorescence, heavy to bright fluorescence, slow crushed yellow cut on best pieces.
5790'	5800'	Limestone to Dolomitic Limestone to Dolomite, off-white buff to very faint gray, dense to cryptocrystalline, goodly scattering of microcrystallinity, vugs fairly common, Calcite encrusted or filled, occasional free Calcite, blocky to thickly tabular, has very faint odor when dry, 40% faint to light yellow fluorescence with abundant spotty bright yellow fluorescence, very faint immediate cut, bright yellow-white streaming crushed cut on best pieces, trace Fusulinid.
5800'	5810'	50% Limestone and Dolomite as above with 10 to 15% fluorescence as above, 50% Limestone, in part dolomitic, light to medium gray, some with brown cast, some light to medium to dark brown, occasional mottled black, dense to cryptocrystalline, trace stylolite fracture with black asphaltic stain, looks tight, No fluorescence.
5810'	5820'	20% Shale, black, sooty to grainy looking in part, soft to hard, brittle, calcareous to limy, plus 30% Limestone, off-white to buff to light gray buff, light to medium gray, mostly dense, some chalky.

Sample Description  
#1-18 Federal

<u>FROM</u>	<u>TO</u>	
5820'	5830'	40% Shale, as above, carbonaceous looking plus 60% Limestone, as above.
5830'	5840'	80% Shale, black, smooth and sub-fissile to grainy looking and blocky, firm, brittle, calcareous to very calcareous, trace Fossil fragments, plus 20% Limestone, off-white to dense, some light to medium gray, grainy looking, some medium brown, dense to thinly tabular, brittle.

30 and 60 Minute Circulation Samples

80% Shale, as above, plus interbedded with 20% Limestone, as above, with increase in brown type.

DIVISION OF OIL, GAS AND MINING

PLUGGING PROGRAM

NAME OF COMPANY: William W. Whitley (Don McCourt)

WELL NAME: Federal 1-18

SECTION 18 SW SW TOWNSHIP 40S RANGE 23E COUNTY San Juan

VERBAL APPROVAL GIVEN TO PLUG THE ABOVE REFERRED TO WELL IN THE FOLLOWING MANNER:

TOTAL DEPTH: 5820'

CASING PROGRAM:

13 3/8" @ 225' 225 sx

8 3/4" openhole

FORMATION TOPS:

Ismay 5458'

Lower Ismay 5572'

Paradox 5636'

Desert Creek 5678'

Base 5778'

DST #1 5565-5685

#2 5700-5820

PLUGS SET AS FOLLOWS:

#1 5600' - 5700' 35 sx  
#2 4500' - 4600' 35 Sx  
#3 1500' - 1600' 35 sx  
#4 525' - 625' 35 sx  
#5 200' - 250' 35 sx  
#6 35' to surface 10 sx

5590' - 5613' 40% pore 100% H<sub>2</sub>O  
5620' - 5626' 22% pore 100% H<sub>2</sub>O  
5734' - 5738' 11% pore 100% H<sub>2</sub>O

DATE November 15, 1979

SIGNED Original Signed By M. T. Minder

cc: USGS

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE

(See other instructions on reverse side)

Form approved.  
Budget Bureau No. 42-R355.5.

13

## WELL COMPLETION OR RECOMPLETION REPORT AND LOG \*

1a. TYPE OF WELL:		OIL WELL <input type="checkbox"/>	GAS WELL <input type="checkbox"/>	DRY <input checked="" type="checkbox"/>	Other _____										
b. TYPE OF COMPLETION:		NEW WELL <input checked="" type="checkbox"/>	WORK OVER <input type="checkbox"/>	DEEP-EN <input type="checkbox"/>	PLUG BACK <input type="checkbox"/>	DIFF. RESVR. <input type="checkbox"/>	Other _____								
2. NAME OF OPERATOR						5. FARM OR LEASE NAME									
William W. Whitley						Federal									
3. ADDRESS OF OPERATOR						9. WELL NO.									
1600 Broadway, Suite 1705 - Denver, CO 80202						1-18									
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*						10. FIELD AND POOL, OR WILDCAT									
At surface SW/4 SW/4 (513' FWL, 743' FSL) Section 18						Wildcat									
At top prod. interval reported below						11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA									
At total depth same						Sec. 18-T40S-R23E									
14. PERMIT NO.				DATE ISSUED											
43-037-30492				7/13/79											
15. DATE SPUDDED		16. DATE T.D. REACHED		17. DATE COMPL. (Ready to prod.)		18. ELEVATIONS (DF, REB, RT, GR, ETC.)*		19. ELEV. CASINGHEAD							
10/14/79		11/13/79		11/15/79 P&A		4625' GR, 4637' KB		---							
20. TOTAL DEPTH, MD & TVD		21. PLUG, BACK T.D., MD & TVD		22. IF MULTIPLE COMPL., HOW MANY*		23. INTERVALS DRILLED BY		ROTARY TOOLS CABLE TOOLS							
5820'		---		---		Rotary		---							
24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*								25. WAS DIRECTIONAL SURVEY MADE							
								No							
26. TYPE ELECTRIC AND OTHER LOGS RUN								27. WAS WELL CORED							
Schlumberger - GR-CNL-FDC, DIL								No							
28. CASING RECORD (Report all strings set in well)															
CASING SIZE		WEIGHT, LB./FT.		DEPTH SET (MD)		HOLE SIZE		CEMENTING RECORD		AMOUNT PULLED					
13 3/8"		48		225'		17 2/3"		225 SX		None					
29. LINER RECORD										30. TUBING RECORD					
SIZE		TOP (MD)		BOTTOM (MD)		SACKS CEMENT*		SCREEN (MD)		SIZE		DEPTH SET (MD)		PACKER SET (MD)	
None										None					
31. PERFORATION RECORD (Interval, size and number)										32. ACID, SHOT, FRACTURE CEMENT, SQUEEZE, ETC.					
										DEPTH INTERVAL (MD)		AMOUNT AMOUNT OF MATERIAL USED			
33.* PRODUCTION										DIVISION OF					
DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)								OIL & GAS					
None										Producing or Shut-in					
DATE OF TEST		HOURS TESTED		CHOKE SIZE		PROD'N. FOR TEST PERIOD		OIL—BBL.		GAS—MCF.		WATER—BBL.		GAS-OIL RATIO	
FLOW. TUBING PRESS.		CASING PRESSURE		CALCULATED 24-HOUR RATE		OIL—BBL.		GAS—MCF.		WATER—BBL.		OIL GRAVITY-API (CORR.)			
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)										TEST WITNESSED BY					
35. LIST OF ATTACHMENTS															
Geological History															
36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records															
SIGNED		TITLE						DATE							
Robert M. Whitley		Petroleum Engineer						January 2, 1980							

\*(See Instructions and Spaces for Additional Data on Reverse Side)

## INSTRUCTIONS

**General:** This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 33.

**Item 4:** If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

**Item 18:** Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments. **Items 22 and 24:** If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

**Item 29: "Sacks Cement":** Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

**Item 33:** Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

### 37. SUMMARY OF POROUS ZONES:

SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF: CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	38. GEOLOGIC MARKERS		
				NAME	MEAS. DEPTH	TRUE VERT. DEPTH
			See attached Well History			

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEYSUBMIT IN TRIPLICATE\*  
(Other instructions on re-  
verse side)Form approved.  
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

U-01058

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Federal

9. WELL NO.

1-18

10. FIELD AND POOL, OR WILDCAT

Wildcat

11. SEC., T., R., M., OR BLK. AND  
SURVEY OR AREA

Sec. 18-T40S-R23E

14. PERMIT NO.

43-037-30492

15. ELEVATIONS (Show whether DF, RT, CR, etc.)

4625' GR, 4637' KB

12. COUNTY OR PARISH

San Juan

13. STATE

Utah

## 16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

## NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON\*

CHANGE PLANS

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT\*

(Note: Report results of multiple completion on Well  
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Verbal permission was received to plug and abandon well as follows:

Plug #1	5700-5600'	35 SX
Plug #2	4600-4500'	35 SX
Plug #3	1600-1500'	35 SX
Plug #4	625- 525'	35 SX
Plug #5	250- 200'	35 SX
Surface		10 SX

18. I hereby certify that the foregoing is true and correct

SIGNED

*Robert M. Petersen*

TITLE

Petroleum Engineer

DATE

1/7/80

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEYSUBMIT IN TRIPLICATE\*  
(Other instructions on reverse side)Form approved.  
Budget Bureau No. 42-R1424.  
5. LEASE DESIGNATION AND SERIAL NO.

U-01058

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

## SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.  
Use "APPLICATION FOR PERMIT—" for such proposals.)

1.

OIL WELL ☒ GAS WELL ☐ OTHER ☐

2. NAME OF OPERATOR

William W. Whitley

3. ADDRESS OF OPERATOR

1600 Broadway, Suite 1705 - Denver, CO 80202

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.\*  
See also space 17 below.)  
At surface

SW/4 SW/4 (513' FWL, 743' FSL) Section 18

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Federal

9. WELL NO.

1-18

10. FIELD AND POOL, OR WILDCAT

Wildcat

11. SEC., T., R., M., OR BLK. AND  
SURVEY OR AREA

Sec. 18-T40S-R23E

14. PERMIT NO.

43-037-30492

15. ELEVATIONS (Show whether DF, RT, CR, etc.)

4625' GR, 4637' KB

12. COUNTY OR PARISH

San Juan

13. STATE

Utah

16.

Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

## NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

☐  
☐  
☐  
☐

PULL OR ALTER CASING

☐  
☐  
☐  
☐

FRACTURE TREAT

MULTIPLE COMPLETE

SHOOT OR ACIDIZE

ABANDON\*

REPAIR WELL

CHANGE PLANS

(Other)

## SUBSEQUENT REPORT OF:

WATER SHUT-OFF

☐  
☐  
☐

REPAIRING WELL

☐  
☐  
☒  
☐

FRACTURE TREATMENT

ALTERING CASING

SHOOTING OR ACIDIZING

ABANDONMENT\*

(Other)

(NOTE: Report results of multiple completion on Well  
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Plugged and abandoned as follows:

Plug #1	5700-5600'	35 SX
Plug #2	4600-4500'	35 SX
Plug #3	1600-1500'	35 SX
Plug #4	625- 525'	35 SX
Plug #5	250- 200'	35 SX
Surface		10 SX

Finished plugging well on 11-15-79 at 2:00 p.m.

Reserve pit has been fenced and Dry Hole Marker installed.

RECEIVED

JAN 9 1980

18. I hereby certify that the foregoing is true and correct

SIGNED

*Robert W. Peterson*

TITLE

Petroleum Engineer

DIVISION OF  
OIL, GAS & MINING  
DATE 1/7/80

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY: